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HIGH SCHOOL CIRCULAR

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1911

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CHAPTER 29, SESSION LAWS OF UTAH, 1911.

HIGH SCHOOL TAX.

An Act levying a State tax for High School purposes and providing the manner of appropriating the same.

Section 1. **Tax Levy for High School Purposes.** That there is hereby levied and directed to be assessed and collected annually a State tax of one-half mill on each dollar of valuation of the taxable property in the State for high school purposes; and the assessment and collection of said tax must be performed in the same manner and at the same time as other taxes are assessed and collected, and shall be apportioned to the several cities and school districts maintaining high schools as hereinafter provided.

Sec. 2. **Board of Education to be Notified.** On the first Monday in October of each year the board of education or school board of any city or school district in which a high school is established shall notify in writing the state board of education of the establishment of such high school and the intention of such city or district to claim the benefits of the high school fund.

Sec. 3. **Standard to be Fixed.** The state board of education shall by rule fix the standard upon which, and the period during the year that, high schools in this state shall be maintained in order to obtain any part of the high school

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fund. Such rule shall be fixed on or before the first day of May, 1911; and thereafter if such rule be amended, the amendment shall take effect on the first day of July at least one year after the date of its adoption. A copy of such rule or amendment shall be furnished to each city or district establishing high schools immediately after its adoption.

Sec. 4. Reports of Attendance. On the second Monday in June of each year, the board of education or board of the city or district in which a high school is established and maintained, shall report to the state board of education, the actual number of students enrolled who have been in actual attendance at such high school for a period of at least twenty weeks, together with the daily average attendance of the students so enrolled during such high school year; which report must be verified under oath by the president or chairman and clerk of the board. Such report shall also give such additional information as the state board of education may require in order to enable it to determine the standard of the school.

Sec. 5. Report of Funds on Hand. On the second Monday in June of each year, the state auditor shall report to the state board of education the amount there is on hand in the state high school fund.

Sec. 6. Apportionment. On the receipt of the report of the state auditor, as provided in the next preceding section, the state board of education shall apportion to the several cities and school districts maintaining high schools for the required period of time and of the standard fixed by the state board of education the amount of money then on hand in the state high school fund; such apportionment shall be made according to the number of students in attendance at each high school who have attended the period of time required by section 4 of this act, as shown by the report of the board of education or board and immediately furnish to the treasurer of each school board, in cities or districts where any such school is maintained, an abstract of such apportionment.

The state board shall also certify such apportionment to the state auditor, and upon receiving such certificate, the state auditor shall forthwith draw his warrant on the state treasurer in favor of the treasurer of the school board for the amount to which the said city or district is entitled under such apportionment.

Sec. 7. **Appointment of Inspector.** The state board of education shall appoint a competent person to inspect at least twice during each school year all high schools claiming any benefits from the high school fund.

Sec. 8. **Compensation and Expenses of Inspector.** The compensation and traveling expenses of such inspector shall be fixed by the state board of education subject to the concurrence of the state board of examiners and shall be paid out of the high school fund upon claims properly certified by the state board of education and approved by the state board of examiners.

REQUIREMENTS OF STATE HIGH SCHOOLS.

Pursuant to the provisions of chapter 29 of the Session Laws of 1911, the state board of education has determined that the high schools of the state which comply with the following requirements shall be eligible to participate in the state high school fund:

1. Each school shall provide adequate equipment for the courses which it offers.

2. Each school shall be maintained at least thirty-six weeks per year, including holidays.

3. Each school shall give at least two years' work as set forth in this course of study.

4. Schools giving a four year course shall require of their students at least fifteen units of credit for graduation. (A unit is one-fourth of a year's work in the high school, approximately equal to one hour's recitation a day throughout the year.)

5. All students shall carry with a passing standard at least three units per year.

6. Teachers shall hold state high school diplomas or state high school certificates issued by the Utah state board of education.

7. To be eligible to enter the public high schools, students shall give satisfactory evidence of having completed a standard elementary education.

The State Board of Education hereby acknowledges with gratitude the valuable assistance rendered by the faculties of the University of Utah and the State Agricultural College in the preparation of outlines in the respective subjects.

THE STATE HIGH SCHOOL COURSE OF STUDY.

Introduction.

The course of study here outlined for state high schools is of necessity very general, leaving to each school the problem of selecting from the elective studies suggested that which is best suited to its local conditions. The studies are arranged in five groups for the purpose of aiding the schools in arranging well balanced courses of study; and also for the guidance of teachers and pupils in selecting studies under the elective system. Where the elective system is admitted in the high school, election should always be only with the approval of the principal or a committee of teachers, and every pupil should be required early in his course to elect studies from each of the five groups. The high school is not the place for specialization; it is rather a place for the adolescent to broaden his world and to discover his own powers. Let him try his hand and brain in each of the various fundamental divisions of thought and action.

In the tabulation of studies by years, printed in this circular, the required studies should be given in the years indicated, while the tabulation of elective studies is suggestive only. The term "required studies," as here used, means that every fully organized school shall offer these studies, and that partially organized schools shall offer all required studies here tabulated in the years of the course offered by the school. For instance, a high school offering only two years of the course must offer two units of English, one unit of Algebra, one unit of Geometry, one-half unit of Domestic Science or Domestic Art, and, if the school is not in a city of the first or second class or in a mining district, it must also offer one-half unit of Elementary Agriculture; otherwise, it may offer, instead of Elementary Agriculture, one-half unit of General Science or Physical Geography. A school offering only the first three years of the course must offer, in addition to the

above studies, one more unit of English and a unit of American History and Civics. In four year courses, the American History and Civics may be given in the fourth year.

The State Board of Education has adopted the liberal policy followed by many of our leading universities, by which it prescribes but one subject for every pupil in the high school; i. e., three units of English for graduation, one course to be taken each year until the three units have been completed. Other requirements of pupils are left to the local authorities.

The primary aim of every high school should be to develop the highest type of manhood and womanhood. This must include a development of the most intelligent and patriotic citizenship, and ability on the part of the individual to co-operate with his community in bettering local civic and industrial conditions.

To aid in accomplishing this end, it is recommended that all high schools require every pupil to take one course in Group IV., Section I.; that the strongest teachers available be selected to give these courses; and that here especially an effort be made to uplift the moral standard of the school community.

While the high school exists primarily for the masses, and may educate hundreds of youths who may never attend college, every high school owes a duty to those who are seeking higher education. Every fully organized high school, at least, should offer all studies required for admission to the various college courses, also high school studies required for admission to professional courses. This will include foreign language and mathematics beyond one unit of Algebra and Plane Geometry. It is very desirable that every high school should offer courses in one or more modern languages.

Lists of text-books adopted and recommended, and lists of apparatus for the equipment of science laboratories will be found in the Appendix.

HIGH SCHOOL STUDIES ARRANGED IN GROUPS.

GROUP I. LANGUAGES AND LITERATURE.

- Section I. **English:** Literature, Grammar and Composition, including both oral and written work (3 units prescribed).
- Sec. II. **History of English Literature** (1 unit).
- Sec. III. **Modern Languages:** German, French, Spanish (Minimum: 2 units in one language).
- Sec. IV. **Ancient Languages:** Latin, Greek (Minimum: 1 unit in one language).

GROUP II. MATHEMATICS.

- Section I. **Algebra** (a) (1 unit).
Plane Geometry (1 unit).
- Sec. II. **Algebra** (b) ($\frac{1}{2}$ unit).
Solid Geometry ($\frac{1}{2}$ unit).
- Sec. III. **Plane Trigonometry** ($\frac{1}{2}$ unit).
Spherical Trigonometry ($\frac{1}{2}$ unit).

GROUP III. SCIENCE.

- Section I. **Physics and Chemistry** (1 unit each).
Descriptive Astronomy ($\frac{1}{2}$ unit).
- Sec. II. **Elementary Agriculture** ($\frac{1}{2}$ unit).
General Science ($\frac{1}{2}$ unit).
Physical Geography ($\frac{1}{2}$ unit).
- Sec. III. **Zoology, Botany, Physiology or Zoology-Physiology** (1 unit each).

GROUP IV. HISTORY AND SOCIAL SCIENCE.

- Section I. **American History**, including English History as connected with American, also a brief analysis of national, state and local government (1 unit).
American Citizenship ($\frac{1}{2}$ unit).
- Sec. II. **General History, Ancient History, Modern History, English History** (1 unit each).
- Sec. III. **Economics, Elementary Sociology** ($\frac{1}{2}$ unit each).

GROUP V. ART AND INDUSTRY.

- Section I. **Domestic Art:** Sewing and Dressmaking ($\frac{1}{2}$ unit each).
Domestic Science: Cooking, Sanitation, Home Economics ($\frac{1}{2}$ unit each).

- Sec. II. **Mechanic Arts:** Woodwork, Metals, Plumbing, Electric Wiring.
- Sec. III. **Agriculture,** Agronomy, Horticulture, Animal Industry ($\frac{1}{2}$ unit each).
- Sec. IV. **Mechanical Drawing, Industrial Art.**
- Sec. V. **Drawing, Music.**
- Sec. VI. **Commercial Geography.**
- Sec. VII. **Accounting.**
- Sec. VIII. **Stenography and Typewriting, Commercial Correspondence.**

In Domestic Art, Mechanic Arts, Mechanical Drawing, Industrial Arts, Drawing, Music, Accounting, Stenography and Typewriting and Commercial Correspondence and all laboratory courses, two hours per day throughout the year is required for 1 unit of credit.

Every accredited high school offering three years or more of work must offer the following courses:

- Group I. Three units in Section One.
- Group II. Two units in Section One.
- Group III. One-half unit in Section Two.
- Group IV. One unit in Section One.
- Group V. One-half unit in Section One.

Total required studies, 7 units with electives to make at least four units in each year.

Accredited high schools offering but two years of work must offer two units of English, one unit of Algebra, one unit of Plane Geometry, one-half unit of Domestic Art or Domestic Science, and one-half unit of Elementary Agriculture, Physical Geography, or General Science.

All high schools outside of cities of the first and second class and mining districts are required to offer one-half unit of Elementary Agriculture in the first year.

The only subject prescribed by the State Board of Education for all students is English, of which one course must be taken each year until three units have been completed.

Local authorities are urged to require all students to take one course in Group IV, Section I.

SUGGESTIVE COURSE OF STUDY BY YEARS.

First Year Studies.

Studies.	No. of Recitations per week.
English	5
Algebra	5
Physical Geography	3
Elementary Agriculture	3
General Science	3
Modern Language	5
Latin	5
General History, or Ancient History	5
Domestic Art	3
Domestic Science	3
Mechanic Arts	3
Drawing	3
Accounting	3

Second Year Studies.

English	4
Plane Geometry	5
Modern Language	5
Latin	5
Modern History, or Ancient History, or General History	5
American Citizenship	3
Botany	5
Zoology	5
Agriculture	3
Domestic Art	3
Domestic Science	3
Mechanic Arts	3
Drawing	3

Third Year Studies.

English	3
Oral Expression	3

Modern History, or English History, or American History and Civics	5
American Citizenship	3
Algebra (b) and Solid Geometry	5
Chemistry	5
Physics	5
Modern Language	5
Ancient Language	5
Agriculture	3
Domestic Science	3
Mechanic Arts	3
Music	3
Commercial Subjects.	

Fourth Year Studies.

English	3
Oral Expression	3
History of English Literature	5
American History and Civics	5
American Citizenship	3
Economics	3
Elementary Sociology	3
Physiology	3
Zoology-Physiology	5
Chemistry	5
Physics	5
Descriptive Astronomy	3
Trigonometry, Plane	3
Trigonometry, Plane and Spherical	5
Modern Language	5
Ancient Language	5
Domestic Science	3
Mechanic Arts	3
Agriculture	3
Music	3
Commercial Subjects.	

OUTLINES OF STUDIES.

LANGUAGES AND LITERATURE.

ENGLISH.

The present course of study requires three units of work in English. It is recommended that the three years work in English be distributed over four years in schools giving the four year course, as it is advantageous for work in this subject to be carried on during the entire high school period. It is not so much the extent of the field covered as the extent of time during which the pupil is actually kept in contact with the cultural influence of language study, that is likely to produce the most beneficial results. Such a division of work as the following is suggested:

First year: Five hours per week.

Second year: Four hours per week.

Third year: Three hours per week.

Fourth year: Three hours per week.

The two-hour-per-week arrangement has usually proved unsatisfactory and should be avoided when another arrangement is possible.

The course of study in English in the best high schools of the country provides for work of three kinds: (1) The reading of standard pieces of English literature; (2) the study of the more difficult facts and principles of English grammar; (3) systematic instruction and practice in English composition.

I. **Reading.** The readings usually attempted are those recommended for use in high schools by the College Entrance Examination Board in English. They include two lists of books—one of books for careful study, and one of books for general reading. The lists which follow are those recommended for the years 1911-1915. They have the advantage over the earlier lists of offering to the teacher a considerable choice. Among them are pieces of literature of almost every essential variety and from almost every historical period;

the results collectively of the years put upon them should be a fairly comprehensive grasp of the history and development of English literature.

For careful study the following are recommended: Shakespeare — "Macbeth;" Milton — "Lycidas;" "Comus," "L'Allegro," and "Il Penseroso;" Burke—"Speech on Conciliation with America;" or Washington—"Farewell Address;" and Webster—"First Bunker Hill Oration;" Macaulay—"Life of Johnson;" or Carlyle—"Essay on Burns."

The following are recommended for general reading:

1. The Old Testament, comprising at least the chief narrative episodes of Genesis, Exodus, Joshua, Judges, Samuel, Kings, and Daniel, together with the books of Ruth and Esther; the "Odyssey," with the omission, if desired, of Books I, II, III, IV, VI, XV, XVI, XVII; the "Iliad," with the omission, if desired, of Books XI, XIII, XIV, XV, XVII, XXI; Virgil's "Aeneid." The "Odyssey," "Iliad," and "Aeneid" should be read in English translations of recognized literary excellence.

For any reading of this group a reading from any other group may be substituted.

2. Shakespeare's "Merchant of Venice," "A Midsummer Night's Dream," "As You Like It," "Twelfth Night," "Henry the Fifth," "Julius Caesar."

3. Defoe's "Robinson Crusoe," Part I; Goldsmith's "Vicar of Wakefield;" either Scott's "Ivanhoe," or "Quentin Durward;" Hawthorne's "House of the Seven Gables;" either Dickens' "David Copperfield," or "Tale of Two Cities;" Thackeray's "Henry Esmond;" Mrs. Gaskell's "Cranford;" George Eliot's "Silas Marner;" Stevenson's "Treasure Island."

4. Bunyan's "Pilgrim's Progress," Part I; the "Sir Roger de Coverley Papers" in the "Spectator;" Franklin's "Autobiography" (condensed); Irving's "Sketch Book;" Macaulay's "Essays on Lord Clive" and "Warren Hastings;" Thackeray's "English Humourists;" "Selections from Lincoln," including at least the two Inaugurals, the Speeches

in Independence Hall and at Gettysburg, the Last Public Address, and Letter to Horace Greeley, along with a brief memoir or estimate; Parkman's "Oregon Trail;" either Thoreau's "Walden" or Huxley's "Autobiography" and selections from "Lay Sermons," including the addresses on "Improving Natural Knowledge," "A Liberal Education," and "A Piece of Chalk;" Stevenson's "Inland Voyage" and "Travels with a Donkey."

5. Palgrave's "Golden Treasury" (First Series), Books II and III, with especial attention to Dryden, Collins, Gray, Cowper and Burns; Gray's "Elegy in a Country Churchyard" and Goldsmith's "Deserted Village;" Coleridge's "Ancient Mariner" and Lowell's "Vision of Sir Launfal;" Scott's "Lady of the Lake;" Byron's "Childe Harold," Canto IV, and "The Prisoner of Chillon;" Palgrave's "Golden Treasury" (First Series) Book IV, with especial attention to Wordsworth, Keats, and Shelley; Poe's "Raven;" Longfellow's "Courtship of Miles Standish," and Whittier's "Snow-Bound;" Macaulay's "Lays of Ancient Rome" and Arnold's "Sohrab and Rustum;" Tennyson's "Gareth and Lynette," "Lancelot and Elaine," and "The Passing of Arthur;" Browning's "Cavalier Tunes," "The Lost Leader," "How They Brought the Good News from Ghent to Aix," "Home Thoughts from Abroad," "Home Thoughts from the Sea," "Incident of the French Camp," "Herve' Riel," "Pheiddippides," "My Last Duchess," "Up at a Villa—Down in the City."

II. **Grammar.** Experience has shown that English Grammar as taught in the grades is rarely of sufficient degree of thoroughness. It is needful, therefore, for the present that somewhere in the high school course there should be vigorous teaching of the subject. Analysis as contained in a thorough book such as Kimball's "English Sentence," should be covered in the first two years. Emphasis, however, should be placed during these two years on composition and on the readings, and constant application of the grammatical principles that are being learned should be made to the written work.

III. **Composition.** The main concern in the work in composition should be to teach the pupils to express in simple English, and correctly and logically, whatever thoughts they are capable of expressing at all. To this end, short compositions should be required at least weekly throughout the course as well as occasional longer ones. The subjects should usually be assigned by the teacher. The assignment may present a number of subjects affording to the pupil some latitude of choice. Such assignment should be carefully prepared by the teacher beforehand and should be of a kind to stimulate in the pupil a desire to write. Devices by which the teacher may surround subjects with interest are numerous. Subjects may be suggested by the work in literature or by other studies which the pupils are pursuing, or they may be drawn from the pupil's own experience and observation. The latter kind of subjects have the advantage of stimulating a more simple and original style of writing and should, therefore, form the greater number of subjects assigned.

Criticism should be constant and thorough and should take account of merits as well as of faults. Corrections and suggestions on the themes should be supplemented by regular personal conferences between the teacher and the pupil.

During the early part of the course instruction in the principles of composition may be presented incidentally. The instructor in assigning work may effectively offer hints as to the proper way to go about various tasks in writing, and as to the selection and arrangement of material, and his criticisms before the class and in personal conferences should deal constantly with the arrangement of clauses in the sentence and of sentences in the paragraph, and with the need of care in the choice of words and in such more elementary matters as spelling and punctuation. Later in the course the definite study of elementary rhetoric may well enough accompany the practice in writing. "At no time," declares the Committee of Ten, of the National Educational Association, "should rhetoric be studied by itself or for its own sake; its connection with the pupil's actual written or spoken exercises should be kept constantly in view."

OUTLINE OF A COURSE OF STUDY IN ENGLISH.

The outline of a course of study in English which follows is made in accordance both with the ideas expressed above and with the results of actual experience. It should not be regarded as inflexible. Conditions prevailing in any particular school—ability of pupils, preparation of teachers, library equipment—will necessarily suggest modifications.

First Year.

1. Readings: Shakespeare—"Julius Caesar;" Tennyson—"Gareth and Lynette," "Lancelot and Elaine" and "The Passing of Arthur;" Scott—"The Lady of the Lake," and "Ivanhoe."

2. The aim of the grammatical study of the first year should be to teach the pupil to know a good sentence when he sees it and to write it. Systematic drill in the structure of the sentence ought to result in a sentence sense which will keep a pupil forever from writing an incomplete sentence or a sentence in which there is want of agreement between verb and subject or between pronoun and antecedent, or in which there are dangling clauses or phrases. In the hands of a competent teacher such a book as Kimball's "English Sentence" will supply needful matter for drill.

3. Composition—Short themes should be required at least once a week. Occasional longer themes should be required. Narrative, descriptive and simple expository subjects are more likely to be within the range of the pupil's knowledge and sympathies than other kinds. Rhetorical instruction should deal systematically with the selection and arrangement of material and with such mechanical matters as headings, margins, paragraph indentions, and capitalization. Teachers need to remind themselves constantly that nothing so prejudices one against them as teachers as slipshod habits in their pupils in these mechanical matters, and in spelling.

Second Year.

1. Readings: "Sir Roger de Coverley Papers" in "The Spectator." Stevenson—"Treasure Island;" Shakespeare—"Merchant of Venice" or "As You Like It;" Homer—"The Illiad" and "The Odyssey."

2. English Grammar. The grammar of the first year should be a preparation for a work like Buehler's Practical Exercises, which might be studied completely during the second year.

3. Composition. Regular short themes should go on as during the first year. The long themes should be more frequent than during the first year, and, to encourage logical thinking, should be more frequently of an expository nature. The same general principles of structure as during the first year should be enforced; and besides more careful attention should be given to paragraph structure and connection, and to sentence structure and connection. The distinctions between words which are often confounded with one another should also be a subject of study. Such a book as Buehler's "Exercises in English" or Hill's "Beginnings of Rhetoric" will supply material for the work in grammar and for a part of the work in rhetoric.

Third Year.

1. Reading: Parkman—"The Oregon Trail;" Coleridge—"The Ancient Mariner;" Lowell—"Vision of Sir Launfal;" Milton—"The Minor Poems;" Eliot—"Silas Marner."

2. Composition. Short themes should continue. Long themes, often of an expository sort, should come at regular intervals and should give the pupils a chance to put down their most mature and extended thought. They may often to advantage be on subjects suggested by the books studied. Instruction in the principles of writing should take account of the more difficult matters connected with paragraph and sentence making. The study of the right meaning of words easily misused should continue. The books read in this and other years should also be made to do service in extending and purifying the pupil's vocabulary.

Fourth Year.

1. Reading: Burke—"Speech on Conciliation with America;" Macaulay—"Essay on Johnson;" or Carlyle—"Essay on Burns" (with selections); Shakespeare—"Macbeth;" Thackeray—"Henry Esmond," or Hawthorne—"House of Seven Gables."

It is strongly advised that during the first two years especially, the readings be arranged to the end of giving the pupil historical background for his later work.

The pieces requiring more mature powers of thought are placed in the fourth year where experience has shown that the more valuable results can be secured from them. In each year's work is to be found at least one classic which can be read outside. It is desirable to assign long lessons in these, giving the pupil a week's preparation period. Once a week, half an hour, or the whole hour, may be given to questioning the class on the pages covered and in pointing out the passages most worthy of notice.

2. English Grammar. The principles and facts of grammar studied in other years should be enforced whenever enforcement is necessary. To take the place of the technical study of grammar suggested for other years still more work may be done with dictionaries and books of synonyms, and with the language of the books studied.

3. Composition. The composition work of this year should be varied in subject matter and should give practice in nearly all the various kinds of writing—exposition, narration, description, and argumentation. Upon the preparation of some of the themes considerable time should be spent. The pupils should constantly be encouraged to have opinions about the books which they read, and about the life which they live and see, and to take a pride in expressing their opinions correctly and effectively. Syke's "Composition and Rhetoric" and Gardiner, Kittredge and Arnold's "Elements of Rhetoric and Composition" are recommended.

HISTORY OF ENGLISH LITERATURE.

The optional course in the study of the History of English Literature should be entirely in the nature of an additional course to be taken especially by those pupils who do not intend to go on to college. It is nowise objectionable that such pupils should be pursuing two courses in English during their last year, and the presence of such a course in the fourth year should not be regarded as sufficient reason for the crowding of the three units of required work into the first three years, an arrangement detrimental to the interests of a great many who will not elect this additional work in Literature.

It should be fully understood that this course in literature is a course in reading literature, not in reading about literature. There are now many books which present the history of English literature in attractive outline. Ready access to these should not be a temptation to make the course a text book course. It is trying to teach literature by text book quite as much as substituting literature for the prescribed High School English that has brought the course as a High School course into disrepute.

The readings listed below as a suitable basis for the course may seem somewhat elaborate. But certainly no high school should attempt the course which has not library facilities covering the readings here listed. And even more certainly no teacher should attempt the course who has not a reasonably full acquaintance with all the literature comprising the list.

Unless otherwise explained the star is intended to indicate the amount of reading that might with propriety be attempted with an ordinary fourth year high school class.

GENERAL REFERENCE BOOKS.

1. For the political and social history of England: Green's *History of the English People*, 4 vols. (Harper), or his *Short History of the English People*, 1 vol. (Harper); S. R. Gardiner's *Student's History of England* (Longmans); Cheyney's *A Short History of England* (Ginn); Traill's *Social England*, 6 vols. (Putnam), in the illustrated edition, is particularly valuable and interesting.

2. General collections of standard English poetry and prose which will be found convenient: A. Poetry: Manly's *English Poetry*, 1170-1892 (Ginn); *The Oxford Book of Verse*, 1250-1900 (Clarendon Press); Palgrave's *Golden Treasury*, series 1 and 2 (Macmillan); Pancoast's *Standard English Poems* (Holt); Ward's *English Poets* (Macmillan); Hale's *Longer English Poems* (Macmillan). B. Prose: Craik's *Selections from English Prose*, 5 vols. (Macmillan); Pancoast's *Standard English Prose* (Holt); Manly's *English Prose*, 1137-1900 (Ginn). C. Poetry and Prose in one volume: Newcomer and Andrew's *Twelve Centuries of English Poetry and Prose.*" (Scott, Foresman & Co.)

3. Convenient school editions of standard works and selections will be found listed in the catalogues of the various publishers. Prominent among these series are *The Riverside Literature Series* (Houghton); *English Readings Series* (Holt); *Everyman's Library* (Dent); *The Scott Library*, *Camelot Series* (Scott); *Golden Treasury Series*, *Temple Classics*, *Temple Dramatists* (Macmillan); *Gateway Series* (American Book Co.); *Standard English Classics*, *Athenaeum Press Series* (Ginn); *Belles Lettres Series*, *Heath's English Classics* (Heath); *Pocket English Classics*, *Highways and Byways Series* (Macmillan); *The Clarendon Press Series* (Oxford).

4. Standard general histories of English literature: Taine's *History of English Literature* (abridged), 1 vol. (Holt); Jusserand's *Literary History of the English People*, 2 vols. (Putnam); Chambers' *Cyclopedia of English Literature*, 3 vols. (Lippincott); Garnett & Goss's *Illustrated History of English Literature*, 4 vols. (Macmillan.)

5. For the history of the English language: Emerson's *Short History of the English Language* (Macmillan); Lounsbury's *History of the English Language* (Holt).

6. For the principles of English versification, and the kinds and forms of English poetry: Parson's *English Versification* (Leach); Corson's *Primer of English Verse* (Ginn); Alden's *English Verse* (Holt); Gummere's *Handbook of Poetics* (Ginn).

7. For the geography of the British Isles, literary landmarks, etc.: Baedeker's *Great Britain and London*; Howitt's *Homes and Haunts of the British Poets* (Routledge); Hutton's *Literary Landmarks of London and Literary Landmarks of Edinburgh* (Harper).

SUGGESTIVE READINGS.

The Anglo-Saxon Period.

Miscellaneous Poetry: *"The Seafarer," "The Love Letter," "The Battle of Brunanburh," *"Riddles" (Selections), "Exodus," *"The Dream of the Rood" (extracts), "Andreas," "Elene," "Judith." Cook & Tinker's *Translations from Old English Poetry*, Ginn & Co., 1902, is an admirable collection of the kind of verse here indicated.

"Beowulf:" *Selections from Part One. "Beowulf" is accessible in several versions, prose and metrical. Garnett's metrical version, Ginn & Co., is faithful to the spirit of the original. Gummere's *Oldest English Epic*, Mac-

millan, 1909, gives the poem in a form approximating the original. The selections in prose by Tinker, in Cook and Tinker's *Old English Poetry* are good.

Prose: *Paragraphs from the *Anglo-Saxon Chronicle*, and from Bede's *Ecclesiastical History of the English People*. Selections from Asser's *Life of King Alfred* and from the works of King Alfred.

Translations from Old English Prose is a companion volume to *Translations from Old English Poetry*.

The Anglo-Norman Period.

*Lady Charlotte Guest's *Mabinogion* (Selections). Editions: Alfred Nutt, New Amsterdam Book Co., J. M. Dent & Co., *Everyman's Library*; S. Lanier's *Boys' Mabinogion*.

Sir Gawain and the Green Knight and *Tristan and Iseult*, both translated into modern prose by Jessie L. Weston in *Arthurian Romances*, published by David Nutt, London.

**Aucassin and Nicolette*, translated by Andrew Lang and published by Thomas B. Mosher, Portland, Maine.

The Ancrén Riwle, modern version in *King's Classics* by J. Morton.

The Pearl, Osgood's prose version—*Belles Lettres Series*, D. C. Heath & Co., or Jewett's metrical version, Crowell & Co.

**The Song of Roland*. O'Hagan's spirited metrical version, Lee and Shepard, or Isabel Büttler's adequate prose version, Houghton, Mifflin & Co.

The Age of Chaucer.

Chaucer's **"Prologue,"* **"The Knight's Tale,"* *"The Nun's Priest's Tale,"* *"Clerk's Tale."* These are found in numerous editions. In the *Canterbury Series*, Katherine Lee Bates retells the story of the Canterbury

Pilgrims. Miscellaneous poems of Chaucer in Manly's *English Poetry* and Ward's *English Prose*.

Langland's *Pier's Plowman* (Selections) in *King's Classics*.

Mandeville's *Travels*, modernized in *English Classics* and in Cassell's *Library*.

**Wycliff's Bible* (Selections), *English Classics Series*, or in Manly's *English Prose*.

John Gower's *Confessio Amantis*. (Selections in Manly's *English Poetry*.)

The Revival of Learning.

Ballads: *"Robin Hood" and "Guy of Gisborne," "Robin Hood and the Monk," "Sir Patrick Spens," *"Johnnie Armstrong," "The Two Corbies," *"Fair Margaret and Sweet William," "The Nut Brown Maid," *"The Hunting of the Cheviot," "Thomas Rhymer." Editions: *English and Scottish Popular Ballads*, Kirtledge and Sargeant, Houghton, Mifflin & Co., *Old English Ballads*, Gummere, Ginn & Co.

*Malory's *Morte d'Arthur* (Selections). Editions: *Athenaeum Press Series*, Ginn & Co.

More's *Utopia* (Selections). Editions: Arber's *Reprints*, *Temple Classics*, *King's Classics*, etc.

Tottel's *Miscellany* (Selections). Arber's *Reprints* or Manly's *English Poetry*.

Roger Ascham's *Toxophilus* and *Schoolmaster* (Selections), in Arber's *Reprints* or Manly's *English Prose*.

Froissart's *Chronicles* (Selections) *Bohn's Library*, Selections in Manly's *English Prose*.

*Tyndale's *Translation of the New Testament* (Selections, Manly's *English Prose*).

John Foxe's *Acts and Monuments* (Selections), Manly's *English Prose*.

The Age of Elizabeth.

I. Non-Dramatic Poetry.

*A rapid reading in such lyrical poems as are printed in Manly's *English Poetry* (Ginn & Co.) ought to be sufficient here. Excellent collections of the verse of the period are Schelling's *Elizabethan Lyrics* and his *Seventeenth Century Lyrics* (Ginn & Co.). In the case of Spenser, additional selections from, say, Canto 1 of the *Faerie Queene* might be read. The Globe edition (Macmillan) gives Spenser's works in one volume.

Poets of the period who should not be missed are Edmund Spenser, Sir Philip Sidney, John Lyly, George Peele, George Chapman, Robert Greene, Samuel Daniel, Michael Drayton, Christopher Marlowe, William Shakspeare, Thomas Campion, Ben Jonson, John Donne, John Fletcher, William Drummond.

II. Prose.

For general purposes there is quite enough prose of this period in Manly's *English Prose*. The star here indicates prose which deserves special attention.

*Raleigh's Works, especially his *History of the World*. Selections by Grossart in *Elizabethan Library*. John Foxe's *Book of Martyrs*. Ben Jonson's *Timber*. *"Bacon's *Essays*, for example: "Truth," "Revenge," "Adversity," "Envy," "Love," "Great Place," "Travel," "Wisdom for a Man's Self," "Friendship," "Discourse," "Gardens," "Studies." Numerous editions, for example: *Everyman's Library*. **The King James Version of the Bible*. A good book for the facts of the translation of the Bible into English is R. Lovett's *Printed Bible*, in *Present Day Primers*. Richard Hooker's *Ecclesiastical Polity* in *Everyman's Library*. Sir Philip Sidney's *Arcadia* and *Defense of*

Poesy in the *Athenaeum Press Series* and in Arber's *Reprints*. Thomas Lodge's *Roslynde*; *John Lyly's *Euphues* in Arber's *Reprints*; *North's *Plutarch's Lives*, school edition by Ginn & Co.; Thomas Nash's *Unfortunate Traveler*; Hakluyt's *Voyages* in *Everyman's Library*.

III. The Drama.

1. The Early Development. Manly's *Pre-Shakespearean Drama*, vol. 1, gives excellent selections. A briefer volume, suitable for all high school purposes, in which the English is modernized, is that by C. G. Child in the *Riverside Literature Series*. Suitable readings are those in this series: "The Quem Queritis," the "Abraham and Isaac," the "Second Shepherd's Play," and "Everyman."

2. Shakspeare's Predecessors. Manly's *Pre-Shakespearean Drama*, vol. 2, gives examples of the plays of all except Marlowe. Marlowe's plays are in the Mermaid series. The chief predecessors, including Marlowe, are represented in Nielson's *Chief Elizabethan Dramatists*, a most excellent book. Houghton, Mifflin & Co. *Marlowe's *Tamburlaine* might be the required reading.

3. Shakspeare. Representative plays in each period should be read. For example: "A Comedy of Errors;" *"The Merchant of Venice," or "As You Like It," and "Henry IV, Part 1," or "Henry V;" "Julius Caesar," or "Hamlet," or "Macbeth;" and "Winter's Tale." School editions of the separate plays are too numerous to need mention. The best single volume edition is that edited by Nielson (Houghton, Mifflin & Co.).

4. Shakspeare's Later Contemporaries and Successors. The most important are Ben Jonson, George Chapman, Thomas Dekker, John Webster, Thomas Heywood, Beaumont and Fletcher, Middleton, Massinger, Ford and Shirley. These are all represented in Nielson's *Chief Elizabethan Dramatists*. Good editions of the separate

authors are those in the Mermaid series. More carefully edited editions are those in the *Belles Lettres* series, D. C. Heath. *Ben Jonson's "Silent Woman," and Beaumont and Fletcher's "Philaster" might be read.

The Puritan Age.

Milton. *Paradise Lost*, Books 1 and 2; **L'Allegro*, **Il Penseroso*, **Comus*, **Lycidas*, and *Selected Sonnets, all in standard English classics for example, and in various other series.

Minor Poets. Sufficiently represented in Schelling's *Seventeenth Century Lyrics* or Manly's *English Poetry*. Selections from Herrick are edited by Hale in the *Athenaeum Press Series*. The chief poets are Herrick, Lovelace, Suckling, Donne, Wither, Carew, Vaughan, and Herbert.

Prose. Except in the case of Bunyan there are perhaps selections enough in Manly's *English Prose*. *Bunyan's *Pilgrim's Progress* in *Standard English Classics*. Jeremy Taylor's *Holy Living and Holy Dying*, in *Temple Classics* and Bohn's *Library*. Browne's *Religio Medici* in *Everyman's Library*. *Walton's *Compleat Angler* in *Everyman's Library*.

Dryden's Poems.

"Palamon and Arcite" in *Standard English Classics*, *Riverside Literature Series*, etc. "Alexander's Feast," "Song for St. Cecilia's Day." Selections from "Abdolon and Achitophel," "Hind and Panther," "Annus Mirabilis," in Manly's *English Poetry*, and in other anthologies.

Dryden's Prose. Dryden's Essay on "Dramatic Poesy" in Manly's *English Prose*.

Dryden's Plays. "All for Love" might be compared with Shakspeare's "Anthony and Cleopatra."

The Restoration Drama. Plays in the *Mermaid Series*. The chief dramatists are Otway, Lee, Wycherley, Congreve, Etheredge, Vanbrough. Though brilliant, they are not suitable for high school readings.

*Samuel Butler's *Hudibras*. Selections in Manly's *English Poetry*, or Ward's *English Poems*. Samuel Pepys' *Diary* in *Everyman's Library*. Selections in Manly's *English Prose*. John Evelyn's *Diary*.

The Eighteenth Century.

Manly's *English Poetry* and Manly's *English Prose* (Ginn & Co.) contain selections from all authors who need to be studied. Ward's *English Poets* (4 vols.), Craik's *English Prose Selections* (5 vols.), and Garnett's *English Prose from Elizabeth to Victoria*, are useful for supplementary reading. All important works should be read entire. Inexpensive editions are noted below.

Pope. **"Rape of the Lock"* and Other Poems, edited by Parrott, in *Standard English Classics*. Various other school editions of the *"Essay on Man,"* and *"Rape of the Lock,"* in *Riverside Literature Series*, *Pocket Classics*, etc.: Pope's *"Iliad,"* I, VI, XXII, XXIV, in *Standard English Classics*, etc. Selections from Pope, edited by Reed, in Holt's *English Readings*.

Swift. **"Gulliver's Travels,"* school edition by Ginn & Co., also in *Temple Classics*, etc. Selections from Swift, edited by Winchester, in *Athenaeum Press* (announced); the same, edited by Craik, in *Clarendon Press*; the same, edited by Prescott, in Holt's *English Readings*. *"Battle of the Books,"* in *King's Classics*, Bohn's *Library*, etc.

Addison and Steele. **"Sir Roger de Coverley Papers,"* in *Standard English Classics*, *Riverside Literature*, etc.; *Selections from Addison*, edited by Wendell

and Greenough, and *Selections from Steele*, edited by Carpenter, both in *Athenaeum Press*; various other selections in *Golden Treasury Series*, *Camelot Series*, Holt's *English Readings*, etc.

Johnson. *Lives of the Poets*, in Cassell's *National Library*; *Selected Essays*, edited by G. B. Hill (Dent); Selections in *Little Masterpieces Series*; **Rasselas*, in Holt's *English Readings*, and in Morley's *Universal Library*.

Boswell. *Life of Johnson* (2 vols.), in *Everyman's Library*; the same (3 vols.), in *Library of English Classics*; also in *Temple Classics*, and Bohn's *Library*.

Burke. "American Taxation," *"Conciliation with America," "Letter to a Noble Lord," in *Standard English Classics*; various speeches in *Pocket Classics*, *Riverside Literature Series*, etc.; *Selections*, edited by B. Perry (Holt); *Speeches on America* (Heath), etc.

Gray. *Selections*, edited by W. L. Phelps, in *Athenaeum Press*; **Selections from Gray and Cowper*, in *Canterbury Poets*, *Riverside Literature*, etc.; "Gray's Elegy," in *Selections from Five English Poets* (Ginn & Co.).

Goldsmith. *"Deserted Village," in *Standard English Classics*, etc.; *"Vicar of Wakefield," in *Standard English Classics*, *Everyman's Library*, *King's Classics*, etc.; "She Stoops to Conquer," in *Pocket Classics*, *Belles Lettres Series*, etc.

Cowper. *Selections*, edited by Murray, in *Athenaeum Press*; *Selections*, in Cassell's *National Library*, *Canterbury Poets*, etc.; "The Task," in *Temple Classics*.

Burns. **Representative Poems*, with Carlyle's "Essay on Burns," edited by C. L. Hanson, in *Standard English Classics*; Selections in *Pocket Classics*, *Riverside Literature*, etc.

Blake. Poems. Poems, edited by W. B. Yeats, in *Muses' Library*; Selections in *Canterbury Poets*, etc.

Minor Poets. Thomson, Collins, Crabbe, etc. Selections in Manly's *English Poetry*. Thomson's "The Seasons," and "Castle of Indolence," in *Modern Classics*; the same poems in *Clarendon Press*, and in *Temple Classics*; Selections from Thomson, in *Cassell's National Library*. Chatterton's poems, in *Canterbury Poets*. Macpherson's "Ossian," in *Canterbury Poets*. Percy's "Reliques," in *Everyman's Library*.

Defoe. **Robinson Crusoe*, school edition, by Ginn & Co.; the same in *Pocket Classics*, etc.; *Journal of the Plague Year*, edited by Hurlbut (Ginn & Co.); the same in *Everyman's Library*, etc.; *Essay on Projects*, in *Cassell's National Library*.

The English Novelists. Such selections as those in Manly's *English Prose* and in Craik's *English Prose Selections*, Vol. 4, with explanations from the teacher concerning the contribution of each novelist to the English novel, ought to be sufficient for high school purposes. Richardson, Fielding, Smollett, and Sterne are the important novelists. Goldsmith's *Vicar of Wakefield* and Johnson's *Rasselas* ought to be read. There are numerous editions. The Gothic writers, Walpole, Radcliffe and Beckford, may be sampled in Walpole's "Castle of Otranto" (in *King's Classics*, *Cassell's National Library*, etc.; Frances Burney's "Evelina," in *Temple Classics*, may be read.

The Age of Romanticism.

Manly's *English Poetry* and Manly's *English Prose* and Newcomer's and Andrew's *Twelve Centuries of English Poetry and Prose* contain good selections from the chief authors of the period. For the important authors, however, separate editions should be provided.

Wordsworth. **“Intimations of Immortality,” “Tintern Abbey,”* best lyrics and sonnets, in *Selections*, edited by Dowden (*Athenaeum Press Series*); selections and short poems, edited by M. Arnold, in *Golden Treasury Series*; *Selections*, also in *Everyman’s Library*, *Riverside Literature Series*, *Cassell’s National Library*, etc.

Coleridge. **“Ancient Mariner,”* edited by L. R. Gibbs, in *Standard English Classics*; same poem, in *Pocket Classics*, *Eclectic English Classics*, etc.; *Poems*, edited by J. M. Hart, in *Athenaeum Press* (announced 1909); *Selections*, *Golden Book of Coleridge*, in *Everyman’s Library*; *Selections from Coleridge and Campbell*, in *Riverside Literature*; *Prose Selections* (Ginn & Co., also Holt); *“Lectures on Shakspeare”* in *Everyman’s Library*, Bohn’s *Standard Library*, etc.

Scott. **“Lady of the Lake,” “Marmion,”* **“Ivanhoe,” “The Talisman,” “Guy Mannering,” “Quentin Durward.”* Numerous inexpensive editions of Scott’s best poems and novels in *Standard English Classics*, *Pocket Classics*, *Cassell’s National Library*, *Eclectic English Classics*, *Everyman’s Library*, etc.; thus *“Lady of the Lake,”* edited by Edwin Ginn, and *“Ivanhoe,”* edited by W. D. Lewis, both in *Standard English Classics*; *“Marmion,”* edited by G. B. Acton, and *“The Talisman,”* edited by F. Treundly, in *Pocket Classics*, etc.

Byron. **“Mazeppa”* and the *“Prisoner of Chillon,”* edited by S. M. Tucker in *Standard English Classics*; short poems, *Selections from “Childe Harold,”* etc., in *Canterbury Poets*, *Riverside Literature*, Holt’s *English Readings*, *Pocket Classics*, etc.

Shelley. **“To a Cloud,” “To a Skylark,”* **“West Wind,”* **“Sensitive Plant,” “Adonais,”* etc., all in *Selections from Shelley*, edited by Alexander, in *Athenaeum*

Press Series; Selections edited by Woodberry, in *Belles Lettres Series; Selections* also in *Pocket Classics, Heath's English Classics, Golden Treasury Series*, etc.

Keats. **"Ode on a Grecian Urn," "Eve of St. Agnes," "Hyperion," "Lamia," "To a Nightingale,"* etc., in *Selections from Keats*, in *Athenaeum Press*; *Selections* also in *Muses' Library, Riverside Literature, Golden Treasury Series*, etc.

Lamb. *Essays*: **"Dream Children," "Old China," "Dissertation on Roast Pig,"* etc., edited by Wauchope in *Standard English Classics*; various essays also in *Camelot Series, Temple Classics, Everyman's Library*, etc. *"Tales from Shakspeare,"* in *Home and School Library* (Ginn & Co.); also in *Riverside Literature, Pocket Classics, Golden Treasury*, etc.

DeQuincey. **"The English Mail Coach"* and *"Joan of Arc,"* in *Standard English Classics*, etc.; *"Confessions of an English Opium-Eater,"* in *Temple Classics, Morley's Universal Library, Everyman's Library, Pocket Classics*, etc.; *Selections* edited by M. H. Turk, in *Athenaeum Press*; *Selections* edited by B. Perry (Holt).

Landor. *Selections*, edited by W. Clymer, in *Athenaeum Press*; *"Pericles and Aspasia,"* in *Camelot Series*; *"Imaginary Conversations,"* selected (Ginn & Co.); the same two volumes in *Duttons' Universal Library*; selected poems, in *Canterbury Poets*; selections, prose and verse, in *Golden Treasury Series*.

Jane Austen. **"Pride and Prejudice,"* in *Everyman's Library, Pocket Classics*, etc.

The Late Nineteenth Century.

I. THE ESSAY.

Thomas Babington Macaulay, 1800-1859.

Standard Life. G. O. Trevelyan, *Life and Letters of Lord Macaulay*. The starred essays at least are available

in inexpensive school editions. The famous third chapter of the History is reprinted in *Standard English Classics* (Ginn & Co.).

Critical Essays. *"Milton," 1825; "Dryden," 1828; "Byron," 1831; "Bunyan," 1831; *"Johnson," 1831; "Bacon," 1837; "Hunt," 1841; "Addison," 1843; "Goldsmith," 1856.

Historical Essays. "Machiavelli," 1827; "Hollam's Constitutional History," 1828; "Mirabeau," 1832; "Walpole," 1833; "Sir Wm. Temple," 1838; *"Lord Clive," 1840; "Von Ranke's History of the Papacy," 1840; *"Warren Hastings," 1841; "Chatham," 1844; "Frederick the Great," 1842; "William Pitt," 1859.

"Lays of Ancient Rome," 1842. *"Horatius," "Battle of Lake Regillus," "Virginia," "The Prophecy of Capys."

"History of England," 1848, vols. 1 and 2; 1855, vols. 3 and 4.

Thomas Carlyle, 1795-1881.

A Good Life. "John Nichol;" *Thomas Carlyle*. The shorter essays are available in the school editions. The *Athenaeum Press Series* editions of "Sartor Resartus" and of "Heroes and Hero Worship" are excellent.

Essays. *"Burns," 1828; "History," 1830; "Characteristics," 1831; "Biography," 1832; "Boswell's Johnson," 1832; "Diderot," 1833.

"*Sartor Resartus*," 1833-1834; *Book II, especially chapter VII, "The Everlasting No," and *Book III, chapter VII, "Natural Supernaturalism."

The French Revolution, 1837. *The passage on Mirabeau, book IV, chap. 4; *"The Flight to Varennes," book XI; "Charlotte Corday," book XVII, chap. 1.

Heroes and Hero Worship, 1841. *Lecture V. "The Hero as a Man of Letters."

Past and Present, 1843. *Book III, chap. II, "Work" and *Book III, chap. 12, "Reward."

Cromwell's *Letters and Speeches*, *1845; "The Battle of Dunbar," part VI.

The Life of John Sterling, 1851; *Coleridge, part 1, chapter 7.

Matthew Arnold, 1822-1888.

A Good Life, Herbert W. Paul; *Matthew Arnold*.

Lectures. *"On Translating Homer," 1861; *"On the Study of Celtic Literature," 1867, *"Emerson," 1883.

Essays. *"Wordsworth," 1879; "Byron," 1881; *"The Study of Poetry," 1888.

Culture and Anarchy, 1869. *Chapter 1, "Sweetness and Light."

Literature and Dogma, 1873.

Poems, 1885: *"Sohrab and Rustum," "To Marguerite," "Shakspeare," "Buried Life," "Tristan and Iseult."

John Ruskin, 1819-1900.

A Good Biography, Frederick Harrison; *John Ruskin*. A good volume of selections is that in the *Riverside Literature Series*. There are numerous school editions of "Sesame and Lilies."

Modern Painters, *Vol I, 1843; *Vol. II, 1846, *Vol. III and IV, 1856; *Vol. V, 1860. Note especially: (1) Passages descriptive of Turner's pictures, e. g., "The Slave Ship," Vol. 1, Part II, Sec. V, Chap. VIII, Par. 39; (2) "Scott's Love of Color," Vol. III, Chap. IV, Par. 42-45; (3) "The Pathetic Fallacy," Vol. III, Part IV; (4) "The Mountain Glory," Vol. IV, Part V, Chap. II, especially the latter paragraphs.

Seven Lamps of Architecture, 1849.

Pre-Raphaelitism, 1851.

Stones of Venice, Vol. I, 1851; Vol. II, 1853; Vol. III, 1853. **"St. Marks."* Vol. II, Chap. IV, paragraphs 19-21.

Unto this Last, 1862.

Sesame and Lilies, 1865. Lectures 1 and 2.

Crown of Wild Olives, 1866. Lecture 1, "Work."

Praeterita, 1885-1889. Ruskin's comments on authors and painters here are noteworthy.

II. POETRY.

Robert Browning, 1812-1889.

There are good selections of Browning's lyrics in the various school series.

I. Lyrics. **"My Star,"* **"By the Fireside,"* **"One Word More,"* **"Prospice,"* **"Never the Time and the Place,"* **"Evelyn Hope,"* **"Love Among the Ruins,"* **"A Woman's Last Word,"* **"Two in the Campagna,"* **"In a Gondola,"* **"The Last Ride Together,"* **"Youth and Art,"* **"The Statue and the Bust,"* **"Cavalier Tunes,"* **"The Lost Leader,"* **"Up at a Villa—Down in the City,"* **"Old Pictures in Florence,"* **"Memorabilia,"* **"Apparent Failure,"* **"House,"* **"Shop,"* **"Fears and Scruples,"* **"Natural Magic,"* **"Magical Nature,"* **"Christina,"* **"Count Gismond."*

II. Dramatic Romances and Idyls: **"The Patriot,"* **"Incident of the French Camp,"* **"The Boy and the Angel,"* **"Instans Tyrannous,"* **"Mesmerism,"* **"The Italian in England,"* **"The Flight of the Duchess,"* **"The Grammarian's Funeral,"* **"Childe Roland to the Dark Tower Came,"* **"Pheidippides,"* **"Ivan Ivanovitch,"* **"Tray,"* **"Ned Bratts,"* **"Clive,"* **"Muleykeh,"* **"Adam, Lilith and Eve."*

III. Soul Analyses: This classification contains Browning's most important work. **"How It Strikes a Contemporary,"* **"Pictor Ignotus,"* **"Fra Lippo Lippi,"*

*"Andrea del Sarto," *"The Bishop Orders His Tomb," "Bishop Blougram's Apology," "The Laboratory," "The Confessional," *"James Lee's Wife," *"Rabbi Ben Ezra," "Caliban Upon Setebos," "A Death in the Desert," *"Fifine at the Fair," "Prince Hohenstiel," "Schwangun," "Pauline," "The Ring and the Book," (especially "Guido," "Pompilia," "Caponsacchi," and the "Pope"), "Cleon," "Paracelsus," "Sordello" (especially Book III), *"Pippa Passes," *"A Blot on the Scutcheon," "Luria," "Colombe's Birthday," "Pachiarrotto," "Ferishtah's Fancies," "Red Cotton Night Cap Country," "Parleyings with Certain People of Importance in their Day," "The Two Poets of Croisic," "The Inn Album."

IV. Philosophical Poems and Poets to be read for Browning's peculiar doctrines: "La Saisiaz," "Christmas Eve and Easter Day," "Paracelsus," "Sordello," "Pauline," "Ferishtah's Fancies," *"Epilogue to Asolando," *"Development," *"Rabbi Ben Ezra."

V. The Music Poems: *"Saul," "Master Hugnes of Saxe Gotha," *"A Toccata of Galippi's," *"Abt Vogler," "With Charles Avison."

Alfred Tennyson, 1809-1892.

Tennyson's shorter poems are available in numerous editions of Selections. The longer poems are printed separately in many editions.

I. Poems of Melodic Charm.

*"Claribel," *"The Throstle," "Far-Far-Away," *"The Snowdrop," "Ode to Memory," *"The Beggar Maid," "The Daisy," "Early Spring," "The Eagle," "The Oak," "The Sea-Fairies," "The Lotus Eater," "Isabel," "Mariana," *"A Dream of Fair Women," "The Charge of the Light Brigade," *"The Charge of

the Heavy Brigade at Balaklava," "The Revenge," "Sir Launcelot and Queen Guenevere," "The May Queen," "The Palace of Art."

II. Character-Sketches and Poems of Epic Quality.

"In the Children's Hospital," * "Dora," "One Ulysses," "Tithonus," "Lucretius," "St. Simeon," "Stylites," "Locksley Hall," "Lada Clara Vere de Vere," * "Enoch Arden," "Maud," "Aylmer's Field," "Will Waterproof's Lyrical Monologue," "Godiva," "Sir Galahad," "The Northern Farmer," "The Princess," "Idylls of the King," "Rizpah."

III. Personal and Philosophic Poems.

"The Poet," "The Poet's Song," * "Merlin and the Gleam," "Frater Ave atque Vale," "To Virgil," * "Ode on the Death of the Duke of Wellington," "England and America in 1782," "To the Queen," "The Vision of Sin," * "Flower in the Crannied Wall," "Break, Break, Break," "In Memoriam," "Vastness," * "Crossing the Bar."

Other Poets of the Period. Other poets of the period who should be known are Matthew Arnold, Elizabeth Barrett Browning, Edward Fitzgerald, Arthur Hugh Clough, Dante Gabriel Rossetti, William Morris, and Algernon Charles Swinburne. Manly's *English Poetry* gives sufficient selections.

III. THE NOVEL.

A dagger marks the most important novelists; stars mark the novels of each author usually regarded as best.

Disraeli, Benjamin, Earl of Beaconsfield, 1804-1827. *Vivian Grey*, 1826-1827; * *Coningsby*, 1844; *Sybil*, 1845; *Lothair*, 1870.

Lytton, Edward G. E. L., Bulwer Lytton, Lord, 1803-1873. *Eugene Aram*, 1832; * *The Last Days of Pompeii*, 1834; *Rienzi*, 1835; *The Lady of Lyons*, 1838; *Richelieu*, 1839; * *Harold*, 1848.

Mrs. Elizabeth Gaskell, 1810-1865. **Cranford*, 1853; *Wives and Daughters*.

†Charles Dickens, 1812-1836. *Sketches by Boz*, 1834-1836; **The Pickwick Papers*, 1836-1837; *Oliver Twist*, 1837-1838; *Nicholas Nickleby*, 1838-1839; *The Old Curiosity Shop*, 1840-1841; *Barnaby Rudge*, 1841; *American Notes*, 1842; *Martin Chuzzlewit*, 1843-1844; *A Christmas Carol*, 1843; *The Chimes*, 1844; *The Cricket on the Hearth*, 1845; *Dombey and Son*, 1846-1848; **David Copperfield*, 1849-1850; *The Child's History of England*, 1851-1854; *Bleak House*, 1852-1853; *Hard Times*, 1854; *Little Dorrit*, 1855-1857; **A Tale of Two Cities*, 1859; *Great Expectations*, 1860-1861; *The Uncommercial Traveller*, 1860; *Our Mutual Friend*, 1864-1865; *The Mystery of Edwin Drood*, 1870.

†Thackeray, William Makepeace, 1811-1863. *Memoirs of Barry Lyndon* (Fraser's Magazine) 1841; *Vanity Fair*, 1847-1848; *The Book of Snobs*, 1848; **The History of Pendennis*, 1849-1850; *Rebecca and Rowena*, 1850; *English Humourists* (lectures delivered), 1851; (published), 1863; **Esmond*, 1852; **The Newcomes*, 1854-1855; *The Virginians*, 1857-1859.

Trollope, Anthony, 1815-1882. *The Warden*, 1855; **Barchester Towers*, 1857; *Doctor Thorne*, 1858.

Reade, Charles, 1814-1884. *Peg Woffington*, 1852; *It is Never too Late to Mend*, 1857; **The Cloister and the Hearth*, 1860; *Hard Cash*, 1863; *Put Yourself in His Place*.

Bronte, Charlotte, 1816-1855. **Jane Eyre*, 1847.

Kingsley, Charles, 1819-1875. **Hypatia*, 1853; *Westward Ho!* 1855; *The Water Babies*, 1863; *Alton Locke*.

†Eliot, George (Mary Ann Evans) 1819-1880. *Scenes of Clerical Life*, 1858; **Adam Bede*, 1859; *The Mill on the*

Floss, 1860; **Silas Marner*, 1861; *Romola*, 1863; *Felix Holt*, 1866; *Middlemarch*, 1871-1872; *Daniel Deronda*, 1876.

†Meredith, George, 1828. **Ordeal of Richard Feveril*, 1859; *Rhoda Fleming*, 1865; *Beauchamp's Career*, 1875; **The Egotist*, 1879; *Diana of the Crossways*, 1885.

†Hardy, Thomas, 1840. *A Pair of Blue Eyes*, 1873; **Far From the Maddening Crowd*, 1874; **The Return of the Native*, 1878; **Tess of the D'Urbervilles*, 1891; *Jude the Obscure*.

LIST OF BOOKS FOR SUPPLEMENTARY READING.

In addition to the books studied in the class-room, a considerable amount of supplementary reading, chiefly of poetry, fiction, biography, and history, should be encouraged. For such reading those books in the second list above which are not read in class may be recommended. Additional books for this purpose are those in the list below. The list is not offered as the best list possible, but as a collection of good books, worthy to be read and to be studied. The teacher's aim, of course, in urging his pupils to do outside reading should be to inculcate in them a taste for the best books, to help them to form the reading habit, and to encourage them to do their reading carefully and systematically:

Lamb—Tales from Shakespeare.

Irving—Legend of Sleepy Hollow; Rip Van Winkle.

Hawthorne—Wonder Book; Marble Faun; Our Old Home.

Kipling—Jungle Books.

Burroughs—Sharp Eyes.

Hughes—Tom Brown at Rugby.

Aldrich—Story of a Bad Boy.

Dickens—Nicholas Nickleby; David Copperfield.

Dana—Two Years Before the Mast.

Defoe—Robinson Crusoe.

Hale—The Man Without a Country.

- Warner**—Being a Bad Boy; My Summer in a Garden.
Scott—Kenilworth; Guy Mannering.
Swift—The Voyages to Lilliput.
John Brown—Rab and His Friends.
Roosevelt—Ranch Life and the Hunting the Trail.
Emerson—Essay on Friendship; on Manners; on Conduct of Life.
Stevenson—Kidnapped; Treasure Island.
Curtis—Prue and I.
Thackeray—The Newcomes, Pendennis.
Holmes—The Autocrat of the Breakfast Table.
Macaulay—Lord Clive; Warren Hastings.
Dryden—Palamon and Arcite.
Shakespeare—Hamlet; Twelfth Night.
Schurz—Abraham Lincoln.
Riis—How the Other Half Lives.
Austen—Pride and Prejudice.
Hugo—Les Miserables.
Thoreau—Walden.
Eliot—Romola.
Churchill—Crisis.

ORAL EXPRESSION.

The oral expression of literature is an essential part of the study of literature, and should be a feature of the teaching of English throughout the course. Composition should be oral as well as written. A considerable amount of oral expression should, therefore, be embodied in the regular required English courses. When in addition to this, a high school conducts a special class in Oral Expression, the following suggestions are offered:

The art which is sought in the study of Oral Expression is to get and to give to others the thought and feeling suggested by the printed page. In memorizing, the student should practice with this purpose in view. He should not study to learn the words of the text. In his striving for the true expression of the thought and feeling which they stand

for, the words should find their place in his mind without special effort on his part. It is a false method to memorize printed lines as to form and sound, merely, and then to endeavor to tack on expression afterwards.

Helpful criticism should be given after the student has prepared the lesson, avoiding technical terms. Results should be sought as far as possible by means of questions, the answers of which are embodied in lines that are being rehearsed; for example, "What is that?" "What for?" "What do you mean?" Such questions skilfully directed should call forth all the meaning of the text, and thus stimulate in the most effective way the true expression.

During the year, in addition to the work suggested below, try to develop simple oral English by having the student tell stories and experiences, and give elementary addresses without written preparation.

First Step—Directness: examples; Hyde's New Speaker and Reader, pages 88, 198, 224, 96.

Second Step—Earnestness; same book, pages 118, 119, 154, 155.

Third Step—Dignity; pages 173, 175, 178, 190.

Fourth Step—Variety; pages 373, 368, 380, 375.

Fifth Step—Emotional power; pages 295, 292, 207, 330, 358, 219.

MODERN LANGUAGES.

The plan is in conformity with the recommendations made in the report of the Committee of Twelve of the Modern Language Association of America, published by D. C. Heath & Co.

The first two years should be devoted to a thorough practice in the elements of the language, aiming at an accurate pronunciation, knowledge of the main principles of grammar, the acquisition of an idiomatic vocabulary, some facility in the spoken language, and ability to translate words of moderate difficulty.

Dictation exercises are recommended. At least half of the time in the class room should be devoted to grammar re-

view, composition, and conversation. The same proportion of time may be profitably given to such a practice through the entire four-year course. During the third and fourth years some reading outside of class may be required.

The selection of the text books is only suggestive.

FRENCH.

First Year.

Fraser & Squair's French Grammar, Part I. The exercises, if too long, could be halved. Francois' "Elementary French Prose Composition," about twelve lessons. Used after the Grammar, this book affords good practice in conversation and grammatical review. A graded reader, such as Aldrich & Foster's, or Kuhn's. In place of a reader, a collection of short stories may be of advantage, such as Williamson & Papot's "Easy French Stories," Meras & Stern's "Cinq Histoires," or Erckmann-Chatrian's "Contes Fantastiques." A short comedy, such as "La Poudre aux Yeux," "Le Voyage de M. Perrichon," "La Joie Fait Peur," or L'Ete de la Saint-Martin."

Second Year.

Francois' "Elementary French Prose Composition," the remainder. Michelet's "L'Histoire de France" "Extraits," or "Lamartine's Scenes de la Revolution Francaise." Daudet's "La Belle Nivernaise," or Sand's "La Mare au Diable." Dumas' "La Tulipe Noire," or Merimee's "Colomba." Augier's "Le Gendre de M. Poirier," or Pailleron's "Le Monde ou l'on s'ennuie."

Third Year.

Koren's "French Prose Composition," first half, and "French Daily Life," first half. Daudet's "La Petit Chose," or "Tartarin de Tarascon." Moliere's "Le Bourgeois Gentilhomme." Hugo's "Les Miserables" or "Notre Dame de Paris," either abridged.

Fourth Year.

Koren's "French Prose Composition," the remainder, and "French Daily Life," the remainder. Dow & Skinner's "Quelques Contes des Romanciers Naturalistes," or Balzac's "Cinq Scenes de la Comedie Humaine." Rostand's "Les Romanesques." Corneille's "Le Cid," or Racine's "Andromaque" or "Athalie."

GERMAN.

First Year.

Spanhoofd's "Lehrbuch der Deutschen Sprache," or Joynes-Wesselhoeft's "German Lesson Grammar," or Fraser & Van der Smissen's "German Grammar," or Becker & Rhodes' "Elements of German." Glueck Auf, a reader. Volkmann's "Kleine Geschichten." Manly & Allen's "Four German Comedies," the first and second.

Second Year.

Bernhardt's "German Composition," Bacon's "Im Vaterland;" Manly & Allen's "Four German Comedies," the third and fourth. Allen & Batt's "Easy German Stories," containing Baumbach's "Ranunkulus" and "Der Fiedelbogen des Neck," Heyse's "L'Arrabbiata," and two selections from Rosegger. Gerstaecker's "Germelshausen." Arnold's "Fritz auf Ferien," or Seidel's "Aus Goldenen Tagen." Wildenbruch's "Das edle Blut" or Seidel's "Liberecht Huehnchen."

Third Year.

Fossler's "Practical German Conversation," and "German Daily Life," first half. Moser's "Der Bibliothekar," or Freytag's "Die Journalisten." Schiller's "Geschichte des dreissigjaehrigen Krieges," or Freytag's "Aus dem Jahrhundert des grossen Krieges," or Von Sybel's "Die Erhebung Europas gegen Napoleon." Storm's "Der Schimmelreiter," or Hauff's "Lichtenstein," Freytag's "Soll and Haben," or Heine's "Die Harzreise."

Fourth Year.

Fossler's "Practical German Conversation," the remainder, and "German Daily Life," the remainder. Lessing's "Minna von Barnhelm." Schiller's "Maria Stuart" or "Wilhelm Tell." Goethe's "Hermann und Dorothea." Selections from Von Klenze's "Deutsche Gedichte."

SPANISH.**First Year.**

Giese's "First Spanish Book," or Hills & Ford's "Spanish Grammar." Bransby's "Spanish Reader." Larra's "Partir a Tiempo."

Second Year.

Umphrey's "Spanish Prose Composition," first half, and "Spanish Daily Life," first half. Padre Isla's "Gil Blas." Moratin's "El Si de las Ninas." Valeria's "El Pajaro Verde." Alarcon's "El Capitan Veneno."

Third Year.

Umphrey's "Spanish Prose Composition," the remainder, and "Spanish Daily Life," the remainder. Caballero's "La Familia de Alvareda." Valdes' "Jose." Galdos' "Marianela," or "Dona Perfecta."

Fourth Year.

Cervantes' "Don Quijote," selections. Selected dramas from Calderon and Lope de Vega.

ANCIENT LANGUAGES.**LATIN.****First Year.**

The student should master a vocabulary of sufficient extent to enable him to begin the reading of Latin prose with

some ease. The regular noun and verb forms and the chief elements of Latin syntax are taught thoroughly by constant practice in translation from Latin into English and from English into Latin.

Bennett's "First Year Latin," Hale's "A First Latin Book," D'Ooge's "Latin for Beginners," Potter's "An Elementary Latin Course," or Collar and Daniell's "First Year Latin;" each of these books contains the material to be covered.

Second Year.

Students should read the first four books of "Caesar's Gallic War," or an equivalent amount of prose selected from "Caesar's Gallic and Civil Wars" or from Nepos' "Lives." "Second Year Latin," by Greenough, D'Ooge and Daniell contains the necessary readings. Either "Caesar's Gallic War" by Walker, or "New Caesar" by Allen and Greenough, with "Latin Sight Reading, Second Year," by Morris and Morgan, may be used. The Latin prose composition contained in either of the following books should also be covered: D'Ooge's "Latin Composition, to accompany 'Second Year Latin,'" D'Ooge's "Latin Prose Composition," Part I, or Bennett's "Latin Prose Composition," pages 1-78.

Third Year.

Students should read at least six orations of Cicero, including the four against Catiline. For the other two, we recommend the Manilian Law and Poet Archias.

The prose composition contained in D'Ooge's "Latin Prose Composition," Part II, or Bennett's "Latin Prose Composition," pages 79-140, should be covered.

Fourth Year.

The first six books of Virgil's Aeneid should be read with special attention to mythology and prosody.

GREEK.

First Year.

The fundamental principles of the language are carefully studied with special attention to writing the language with proper accentuation. The chief aims are to obtain a good working vocabulary and to be able to use that vocabulary correctly in the ordinary forms of Greek syntax. Gleason's "Greek Primer" contains the amount of ground to be covered.

Second Year.

Four books of Xenophon's *Anabasis* are used, accompanied with prose composition such as found in Pearson's "Greek Prose Composition" or an equivalent.

Third Year.

Six books of Homer's "Iliad" are read, with special attention to prosody and to the religion of the Greeks. Sight reading from the 23rd and 24th books.

MATHEMATICS.

Algebra a.

The course in first year algebra should cover: addition, subtraction, multiplication and division of algebraic expressions. Simple equations and problems leading to the same. Factoring, highest common factor, lowest common multiple. Simple fractional expressions. (We suggest that too much time should not be spent on complex fractions.) Simultaneous equations. Graphical representation of equations. Invention, evolution and simple problems in the theory of indices and surds.

Algebra b.

We suggest that the course in Algebra b overlap Algebra a, and commence with the theory of indices and surds, going into more detail. Imaginary numbers, quadratic equations, simultaneous quadratic equations, ratio, proportion, variation, the Progressions and the Binomial Theorem for positive exponents.

Plane Geometry and Solid Geometry.

In both plane and solid geometry much time should be spent on exercises and numerical problems.

Plane Trigonometry.

The fundamental formulas should be studied and applied.

Logarithms, the solution of triangles, inverse functions, trigonometric equations.

Spherical Trigonometry.

Solution of spherical triangles with application to the terrestrial and celestial spheres.

SCIENCE.

Physics.

A satisfactory course in high school Physics should consist of daily class-room and weekly laboratory work throughout the year, the laboratory period being three hours once a week, or two hours twice a week.

The class-room work should consist of lecture-table demonstrations and experiments by the teacher and recitations by the students. The laboratory work should be chiefly quantitative in character. The students may work in pairs in the laboratory, but each student should keep a neatly written record of this work. This record should be written with ink in the laboratory, under the teacher's immediate supervision, and should consist of a statement of the experiment to be done, a statement of the principles and theory involved, a description of the apparatus and method used, a tabulation of all observations, data, and computed results, and finally a discussion of the results and what they show. Drawings and sketches of apparatus greatly aid in description.

A satisfactory pursuit of this subject requires a good modern text book and at least three hundred dollars' worth of apparatus, judiciously selected. If apparatus and laboratory facilities can not be provided, physics should not be taught. The laboratory facilities for good work with a class of a dozen or fifteen need not be expensive, three hundred dollars being enough to make a good start in both class-room and laboratory apparatus.

Chemistry.

For this subject we suggest two laboratory periods of two hours each, preferably consecutive, two recitation periods and one lecture or demonstration. The experiments suitable for the the latter will be found in the Teachers' Handbook accompanying the text. For valuable suggestions regarding the laboratory equipment and the best methods of teaching the subject, consult Smith and Hall's "Teaching of Chemistry and Physics in Secondary Schools."

The cost of laboratory equipment, including desks for a class of ten students, would be from \$50 to \$100. The chemicals required at the outset would cost \$50. After the first year the annual cost should not exceed \$25. In addition to the above, each student would require apparatus that would cost about \$7.50.

Astronomy.

Students should be referred directly to the objects of the sky in order to stimulate interest before spending much time on technical details; that is, the course should be observational rather than technical. In the study of the subject, more of thinking than of memorizing should be required, and the physical, rather than the mathematical aspects of the science should, perhaps, be emphasized. If presented in this way, it will be found that astronomy is not a series of isolated and imperfectly connected facts, but an interesting sequence of events, and that the fundamental principles of the science are connected with tangible and familiar objects as is the case in chemistry and physics.

A course in astronomy of great educational value can be given in the high school with little formal mathematics beyond a good knowledge of elementary algebra and geometry.

It is very desirable to have a reference library of a few well chosen works on astronomy, and a small telescope costing about \$150 to \$200.

Elementary Agriculture.

This required course has in view two objects. First, to give our boys, a majority of whom will eventually follow farming as a profession, a knowledge of the fundamental principles of the leading agricultural operations; and, second, to make our students acquainted with the relations of some of the natural forces which govern the industrial life of mankind. This course then, is only in part a technical agricultural course; it must likewise give a general survey of nature as related to plant and animal production.

A number of simple experiments with soils and crops should be given in connection with the course. The text suggested is, "Agriculture for Schools of the Pacific Slope," by Hilgard and Osterhout.

A. How Crops Feed.

1. What leaves do.
2. How starch is formed.
3. What the roots do.
4. The mineral foods of plants.
5. Pod-bearing plants and their function.
6. Germination.

B. The Soil.

7. The origin of soils.
8. The structure of soils.
9. The plant food in soils.
10. What makes a soil fertile.
11. Manuring.
12. Plowing.
13. Cultivation.
14. Alkali soils.

C. Irrigation.

15. How water passes through the plants.
16. How water moves in the soil.
17. The right amount of water to use.
18. Fall and spring irrigation.
19. How to measure water.

D. Dry-Farming.

20. Storing water in the soil.
21. Keeping water in the soil.
22. Regulating the transpiration.
23. Sowing on dry-farms.

E. Crops.

24. Wheat and other grains.
25. Lucern or alfalfa.

26. Sugar beets.
27. Orchards.
28. Garden crops.
29. Miscellaneous.

F. Animal Production.

30. How the animal feeds.
31. The breeds of cattle.
32. The dairy cow and calf.
33. The beef animal.
34. The horse.
35. The hog.
36. Poultry keeping.
37. Sheep (farm and range.)

G. Plant Diseases and Insect Pests.

38. Wheat and other grains.
39. Lucern.
40. Sugar beets.
41. Fruit.
42. Vegetables.

H. Agricultural Manufactures.

43. Beet-sugar.
44. Butter, cheese and condensed milk.
45. Flour and bread.
46. Packing and curing of meats.
47. Wool and cloth.
48. Packing and curing of fruits and vegetables.
49. Exports and imports of Utah.

General Science.

The purpose of a general science course is to secure such familiarity with natural laws and phenomena that the student will desire to know more about them and their practical application to every-day life. To pursue successfully any branch of science one must be trained along lines of right thinking, have a quickened power to observe intelligently, and

lastly he must have a vital interest in the physical and biological manifestations of nature. This power comes from a study of the common things about us. Such topics as a drop of water, bit of coal, lump of dirt, a plant, an animal, the lever, pulley, wheel and axle, screw and wedge, the pump, motor car, air ship, telephone, telegraph, furnish an abundance of subject matter. The use of laboratory apparatus and the accurate recording of results should be emphasized.

Physical Geography.

In this beginning course in science an appreciation of the scientific method and spirit should be developed. Due attention should be given to field work. The student should be taught to see things accurately and should be required to record carefully some of the results of his observations. Our own state furnishes unexcelled facilities for the study of physiography. Usually within reach of the school house are several physiographic types or units. These should be carefully observed and studied and should form a basis for the study of subject-matter in the text. The following topics should receive special attention: Meteorological conditions of Utah; the rocks and soils of the locality and the State; the Wasatch, the Uintah and the Henry mountains; the Great Basin, its ranges, deserts, volcanic features and ancient lakes; Great Salt Lake; the Colorado Plateau and Grand Canyon.

BIOLOGY.

Zoology.

From half to three-fifths of the periods allotted to this subject should be devoted to laboratory work. Each laboratory period should be not shorter than an hour and a half, i. e., equivalent to two ordinary recitation periods. It is desirable that the subject should be approached from the natural history standpoint. To this end, it is recommended that the course be introduced through studies on the insects and their allies, since these animals, which in species outnumber those of all other groups together, lend themselves admirably to the illustration of such topics as metamorphosis, protective

resemblance, mimicry, parasitism, commensalism and social life. Principles of classification and scientific nomenclature may be taught here as illustrated, e. g., by the locust and its relatives. Ample field work should be done as part of this study. After completion of the work upon the orthoptera, the other types and groups may be taken up in regular sequence. In the laboratory students should be trained to observe closely and to make the most of each specimen studied, as the acquisition of the habit of correct and thoughtful observation and of a definite knowledge concerning a limited number of animals is better than the learning of mere classification and a merely superficial knowledge of a large number of forms. The careful and orderly recording of work by means of drawings and notes, particularly the former, should receive special attention. The room for work in zoology should be well lighted. It should be provided with convenient tables at which the student may work; with a water supply and receptacles for waste material and places for the storage of apparatus, both that for general departmental use and that for the individual use of students. Aquaria for the keeping of living material should be arranged for. Students may be required to provide themselves with hand magnifiers, small scissors, forceps and scalpels, which need cost but little; or these may be provided by the school, when use could be made of a better type of dissecting microscope. One compound microscope for each two students in a section is desirable but not indispensable. At the outset there should be, however, at least one good compound microscope, with slides and cover-glasses. There should be kept on hand a few ordinary reagents, such as chloroform, alcohol, formalin, turpentine or xylene, Canada balsam, glycerine, ammonia, hydrochloric acid and a few stains.

Linville and Kelly's "Text Book of Zoology" is recommended. "The Guide for Laboratory and Field Work" by the same authors gives outlines for laboratory and field work, detailed instructions and suggestions to teachers, and a list of reference books and articles dealing with the several groups and topics.

Botany.

The time devoted to this course should be in amount and arrangement the same as for zoology. The course should give a general view of the entire subject. More attention than has been usual should be given to ecologic relations. In addition to the fundamental conceptions of ecology, a good idea of comparative morphology and life histories and of the more important phases of physiology should be aimed at in the course. In anatomy and morphology, the following topics should be considered, probably best in the order indicated: The seed, the food supply, experimental determination of its nature and value; generation and growth of embryo; the shoot; gross anatomy, and relations of leaf and stem buds; structure of shoot, annual growth; the root; the flower, structure and function of parts, with study of important types; the fruit, with study of types; the cell and formation of tissues. In plant physiology these topics should be considered: Water in the plant, including osmosis, transfer, transpiration, plasmolysis, turgidity; photosynthesis; respiration; digestion; irritability (geotropism, phototropism, etc.); growth; fertilization. The following ecological subjects should be carefully treated: Dissemination; cross-pollination; light-relations; plant societies; plant associations and geographical distribution. The following are selected as types to be studied in the laboratory. Others named in the guide indicated below may be included when time permits: Pleurococcus or similar form, Spirogyra, Fucus, Nematium, Bacteria, yeast, a rust (Puccinia), mushroom, lichen, liverwort (Marchantia), moss (Minimum or Funaria), fern, Equisetum, Lycopodium and Selaginella, pine, monocotyledon, and dicotyledon studied in comparison with the preceding. In addition, forms representing the principal divisions of Angiosperms should be studied and considerable time devoted to forming an acquaintance with the local flora.

As indicated under zoology, a special laboratory for biological work is a necessity. A supply of glassware for the simple physiological work required, in addition to the equipment needed for zoology, must be provided.

Bergen and Davis' "Principles of Botany" with the "Guide for Laboratory and Field Work," by the same authors, are recommended for use. In the latter book the teacher will find many useful suggestions as to details of work. Other good high school text books are Coulter's "Plants" used with Caldwell's "Laboratory Manual of Botany;" Bailey's "Botany" and Atkinson's "Elementary Botany." The teacher will find Osterhout's "Plants" very suggestive and helpful in arranging a series of experiments on plant life where it is necessary to use simple and easily obtainable apparatus.

Physiology.

The work of this course should be based as far as possible upon practical laboratory exercises and emphasis should be placed upon the important physiological principles and processes rather than upon details of anatomy. Special attention should be given to the thorough treatment of the fundamental processes of nutrition, including such phases as digestion, circulation, respiration, assimilation, dissimilation and excretion, the co-ordination between which should be clearly brought out. In the consideration of foods, the student should become familiar with the more important nutrients, and the tests for their detection. The uses of foods, methods of cooking, and food economy should be thoroughly treated. As a basis for work in hygiene, the general principles of bacteriology should be presented and discussed in considerable detail. Practical laboratory work in this line should be emphasized. In class such topics as the following should be dealt with: Nature of infectious diseases, isolation, principles and methods of disinfection, inoculation and vaccination, general sanitary regulations, pure foods.

Of the apparatus and equipment required for the course in Physiology, much will be identical with that for Zoology and some with that used in Physics and Chemistry.

Zoology—Physiology.

For teachers competent to treat the subject in that way, it is suggested that Zoology and Physiology be combined in

a unit course. The student can be led to understand the most important physiological processes through the first or zoological part of the work. Application of these facts to Human Physiology can then be made with a minimum of time and a maximum of result in understanding. Some chapters in Kellogg's "The Animals and Man" are well adapted to this method, as is also the latter part of Hunter's "Essentials of Biology."

HISTORY AND SOCIAL SCIENCE.

The use of the text book in history should be supplemented as fully as possible by reading extracts from the great historians and from sources (see list below) and by a free use of the library on the part of the pupils. Movements as well as periods should be studied. The development of man, individually and socially, being the theme, all available means should be used to show the organic unity of all history.

Though most texts place the greater emphasis upon political history, there are thoughts, motives and deeds that lie much deeper than politics; industrial, social, and moral phenomena should be given preference to political. Moreover, the life of a people is always greater than the life of an individual. Biography, though a very important part, is not the chief thing in history. Studies of the lives of great men should be given in such manner as to develop a period or a movement, but not as the formative forces in such period or movement.

The two great factors in history are race character and environment. Out of these develop all there is in civilization. Therefore, there can be no intelligent study of history that is not based upon an acquaintance with human life and a knowledge of geography. A thorough review of the latter and a general discussion of the former should precede every high school course in History.

American History and Civics.

The course should be introduced by a survey of European History and English History during the sixteenth century. Emphasis should be laid upon the industrial, social, and political changes in England during the seventeenth century. In dealing with American History, the industrial, social, political, and intellectual movements, together with the civic institutions should be studied in some detail. For the period after the American Revolution, the following general topics may be taken: History of slavery in the United States; history of the tariff, industrial development, expan-

sion, inventions, railroads and telegraphs, agriculture, mining, stock-raising, lumbering, etc. Particular care should be taken to show how the industrial pursuits of a people create their social and political conditions.

American Citizenship.

This course will of necessity draw its material from civics, sociology, and economics, but all of this material should be dealt with from the ethical point of view, the aim of the course being to develop clear thinking on ethical questions and a keener sense of social obligation. Since character and personality are the foundations of good citizenship, the course must first concern itself with a study of the individual virtues and the bearing of these virtues upon the stability of society and the nation. This should be followed by a study of man as a social being, the nature of society, and the origin and growth of civilization in its bearings upon the ethical obligations of the individual to mankind as a unit. The notion of the solidarity of the race, together with the idea of justice, should be brought out through inductive study in such a way that the pupil can never again think that he has "the right to do as he pleases," except as he pleases to do that which is best for humanity. The aim of the course should be thoroughly practical, as well as theoretical. The every day ethical problems of the school, the local community, the state, and the nation should be discussed as they arise, and a special effort should be made to have pupils apply ethical theories to their own school affairs. This course may thus be made a powerful adjunct to the school authorities in their efforts to improve the discipline and the moral tone of the school.

General History.

1. Review of geography. Grand divisions; distribution of great land and water areas; climatic zones; life under different conditions; special study of the geography of Mediterranean countries and the Tigris-Euphrates valley.

2. Egypt, Chaldea, Babylonia, and Assyria; the Hebrews, Phoenicians and other peoples of the region lying between the Nile and the Tigro-Euphrates valleys. These peoples fall into three groups, the characteristics of each being largely determined by geographical position and conditions, viz.: the Nile group, the Tigro-Euphrates group, and the intermediate group.

3. Lydia, Persia, Greece. Though the two former were peoples of Asia-Minor, in character and institutions they resembled the Greeks. Their history, with that of the Phoenicians, forms a connecting link between Oriental and European history. Persian history parallels Greek; and Phoenician, Greek and Roman history for several centuries.

4. The Greek Peoples. Geography. Europe a peninsula of Euro-Asia. Greece a secondary peninsula, broken up by inlets of the sea into numerous smaller peninsulas and islands; topography; effects upon Greek character and institutions. Note that all Greece faces Asia-Minor and has no direct connection with Italy.

Prehistoric Greece and the Heroic Age. Study the clan (gentile) organization. Character of original inhabitants (Iberian); character of invaders (Dorians); results of assimilation of the two. Make liberal use of the extracts from the Iliad and the Odyssey; encourage pupils to read the latter through. (Butcher and Lang's prose translations should be used.) Develop the industrial, the social, and the political life, in this order.

The rise of the Greek cities. Athens and Sparta as types. Trace the progress through the stages of aristocracy, oligarchy, tyranny, to the democracy in Athens. Compare the development through like stages in Sparta. Other Greek cities and the colonies; the Persian wars; age of Pericles; the Peloponesian wars; rise of Macedon; conquest of the East by Alexander; general view of the Greek world at the close of the third century B. C.

Greek art, literature and philosophy.

5. Roman History. Outline the work after the plan given here for Greece, noting the characteristic differences in Roman development and modifying accordingly.

6. The Middle Age. Geography of Europe. The beginnings of Christianity; the early Teutons (compare early Greece and early Rome); feudalism and chivalry; life of the people; the Mediaeval church; the holy Roman empire; the crusades; the rise of the towns; Norse invasions; beginning of science, literature, and exploration.

7. Modern History. General review of the life, thought and institutions of the Middle Age; geography and geographical ideas; the revival of learning; the reformation. It is suggested that the two last named great movements grow naturally out of the life of the people, and are not merely grafted on to it. The discovery of new worlds and effect upon Europe; rise of modern nations and modern ideas; era of revolution; era of democracy. Make liberal use of the selections in Robinson's Readings and Colby's Sources.

Ancient History.

This course should include a study of ancient nations down to the year 800 A. D. Students should first make a detailed study of the geography of the Mediterranean countries, including river systems, climate, soil, etc. The Nile valley and the Tigro-Euphrates country should receive special attention.

Greek and Roman history should be preceded with a close study of the Egyptian, Babylonian, Phoenician, Assyrian and Hebrew civilizations. The Old Testament may be used to good advantage in a study of the political, social, and industrial history of these nations.

Greek history should deal particularly with Athens and Sparta; their growth into powerful political and intellectual communities; the Persian and Peloponesian wars and their importance in developing Greek colonization; the Age of Pericles; the literature, art, philosophy and political life; Alexander the Great and his work, especially the City of Alexandria; what the Greek world was in the third century.

Roman history should show how the Latins came to control Italy and the Mediterranean Sea. Particular emphasis should be placed upon the political, industrial, and religious history of the empire; the conquests and civil wars; the birth of Christ, and how Christianity became a world power; the German invasions, and what is meant by the expression, "Downfall of Rome."

Modern History.

A brief but comprehensive survey of the most important periods of European history since 800 A. D. Emphasis laid especially upon the Revival of Learning at the time of Charlemagne, the Crusades, the Renaissance, the industrial revolution of the fifteenth and sixteenth centuries, the discovery of America, the peasants' revolt in Germany, the Age of Louis XIV., Frederick the Great, the French revolution; nineteenth century Europe from the Congress of Vienna (1815) to the present.

Introduction to Economics.

Study of the principles and conditions affecting the production, ownership, exchange, distribution and consumption of wealth.

Introduction to Social Science.

Descriptive study of rural and village life, as to economic and cultural activities.

Comparison of the habits, customs and institutions of typical living races.

Life and development of prehistoric man.

Evolution of modern urban life and culture.

ART AND INDUSTRY.

DOMESTIC ART.

Sewing.

This course aims to give the necessary stitches in hand and machine work. A study of machines and the attachments, the use of patterns, and simple rules in dress making.

Teachers should not overlook the work in textiles, to give the students of high school age some knowledge of the materials in question. Aim to give some work in the use and misuse of embroideries, lace, ribbons, etc.

The stitches should be practiced on a small piece of cloth before being applied to the article to be made.

1. Stitches. (1) Basting. (2) Running. (3) Stitching. (4) Over sewing. (5) Hemming and over casting. (6) Simple seams (French fell).

Application :

1. Cooking apron.
2. Use of Machines.
Application of 1 and 2.
Making of drawers.
Making of skirt.
3. Making of corset cover.
4. Use of patterns.
5. Making a shirt waist.
6. Making a plain skirt.

Dressmaking.

1. Drafting (with yard stick and tape measure) of waists and skirts.
2. Study of materials.
3. Making of simple wash dress.

DOMESTIC SCIENCE.

Cooking a.

This work is planned to give girls of the high school age some knowledge of foods and their composition, the care of

the stove and utensils used in the kitchen, and the preparation of a simple meal, with rules for serving and setting a table.

1. Housekeeping rules.
2. Care of kitchen.
3. Use of utensils.
4. Measurements.
5. Fuels—illustrate by experiment.
6. Stoves—construction and building of fire.
7. Heat.

Lessons begin with:—

1. Baked apple.
 2. Canning fruit—demonstration.
 3. Five food principles—show milk separated into five parts.
 4. Milk.
 - a. Effect of heat on milk—sour and sweet.
 - b. Souring of milk.
 - c. Milk soup.
 5. Protein.
 - a. Eggs.
 - b. Meat.
 6. Fats.
Ice cream.
 7. Carbohydrates.
 - a. Sugars.
 - b. Starches—Cereals, Bread (3 lessons), White sauce with potatoes.
 8. Table setting and serving.
 9. Preparation and serving a meal.
- Other lessons inserted at discretion of the teacher.

Cooking b.

This work is a continuation of Cooking a, with extended work in cooking of foods, the planning of menus at limited cost.

Prerequisite: Cooking a.

1. Review of five food principles.
2. Review of milk—make cottage cheese.
3. Protein.
 - a. Cheese.
 - b. Eggs.
 - c. Fish.
 - d. Meat.
 - e. Poultry.
 - f. Legumes.
 - g. Gelatine.
4. Fats.
 - a. Salads.
 - b. Deep frying.
5. Carbohydrates.
 - a. Corn starch.
 - b. Cereals.
 - c. Batters. (Means of making batters light.)
(Means of mixing batters.)
Popovers.
Muffins.
Bread.
Rolls.
Baking powder biscuit.
Cookies.
Cake.
 - d. Vegetables.
 - e. Fruits.
6. Planning menus at limited cost, and serving.
 - a. Breakfast.
 - b. Luncheon.
 - c. Dinner.

Advanced Cooking.

(Home Economics could be substituted for this course.)

I. Note time of preparation and cost of the following foods:

1. Puff paste.
2. Cream puff.
3. Souffles.
4. Timbals.
5. Candy.
6. Pressed meats.
7. Croquettes.
8. Elaborate and simple meal.

- II. Principles of using a chafing dish.
- III. Principles involved in the preparation of food for invalids.
- IV. Preparation of trays and picnic lunches.

SANITATION AND HOUSEHOLD ART.

This course aims, first, to teach the part that bacteria and other forms of life play in public health; and, secondly, to locate and plan the home in reference to proper ventilation, lighting, plumbing and heating, and the principles of color and design in the home.

Sanitation.

(Hygiene as a basis and public sanitation involved throughout the course.)

- I. Health and disease. (Dust garden experiments.)
- II. Need of shelter.
 - Site of the house.
 - Sunshine.
- III. Ventilation.
- IV. Lighting.
- V. Plumbing.
- VI. Heating.
- VII. Planning of house.

Household Art.

- I. Principles of color and design.
- II. Application of principles to rooms of house planned in house sanitation.

MECHANICAL DRAWING.

Course A—Freehand.

Work to be Done. Twenty plates.

- 1. Small letters.
- 2. Capital letters.
- 3. Roman numerals.
- 4. Arabic numerals.
- 5. Mixed lettering.

- 6-8. Freehand lines.
- 9-11. Shaded areas.
- 12-15. Line drawings of models.
- 16-19. Shaded drawings of models.
- 20. Title Plate.

Arrangement of the Plate.

Size—12x15 inches.

Border—Single line.

Margin—One and one-half inches all around.

Markings—Name, date and plate number.

Materials.

Paper—Ordinary white drawing paper.

Pencils—6H and 4H Drawing pencils.

Pens—One-half dozen Gillott's No. 303, and one-half dozen ball-pointed pens.

Penholders—Two penholders with cork grasp.

Erasers—One soft eraser, one ink eraser, one cube of art gum.

Thumb Tacks—One dozen smallest size.

Ink—One bottle of black; one bottle of carmine, (Higgin's or Post's.)

Scales—One architect's triangle scale; one engineer's triangular scale.

T-Square—One 24-inch T-Square (amber edges preferred).

Triangles—One seven-inch 45 degree and one eight-inch 30 degrees (amber preferred).

Pen Wiper—Piece of linen not less than 12 inches square.

Pencil Sharpener—One file or sand paper sharpener.

Course B—Mechanical.

Work to Be Done. Twenty plates.

- 1-6. Copies of plates 1-6 in Reinhardt's "Technic of Mechanical Drawing."
- 7. Lettering in paragraphs.
- 8-9. Carpentry drawings.

- 10-11. Valves or machine parts.
12. Geometrical figures.
- 13-14. Irregular curves.
- 15-17. Tinting.
- 18-19. Spatter work.
20. Title plate.

Arrangement of Plates.

Size—12x18 inches.

Border—Double line.

Margin—One and one-half inches all around.

Markings—Name, date, and plate number.

Materials.

Instruments—One set containing at least: One ruling pen (right line pen); one pair of dividers; one compass for pen and pencil.

Paper—Whatman's Hot Pressed, size 27x40 inches.

Curves—One Ann Arbor Irregular Curve. Amber.

Paste—Tube of Library paste or Higgin's Drawing Board Mucilage.

Sponge—One 10c or 15c size.

Water Colors—Carmine and Prussian Blue; one tube or palette of each.

Palettes or cups for mixing colors.

Brushes—One double pointed camel's hair brush, good size.

Also everything in the list for Freehand, except paper.

Reference Books.

Reinhardt's books named in the Appendix are perhaps the best books published for the line of work they cover. The chapter on "Working Drawings" in "Mechanical Drawing," by Cross is a good one. (Ginn & Co., publishers.)

Other books recommended are: Mechanical Drawing, by Faunce, Boston. Mechanical Drawing, by Anthony; D. C. Heath & Co.

MECHANIC ARTS.

The time given to the mechanic arts is usually so short that the student cannot become proficient as a skilled workman in any line of work. It is more in harmony with the aim of high school practice to give the student a good elementary knowledge of several branches of the mechanic arts rather than attempt to make him proficient in one only. This will enable the student to get a good start in several and then he will be able to make a more intelligent choice of the branch he expects to follow. The course should embrace those phases of work that are of general application, especially work that must be done by hand. So we advise that the course should include the elements of the vocations that are employed in building the modern house, i. e., carpentry, tin-smithing, plumbing, electric wiring, etc.

Every educated man should know something about these branches of work, while pattern making, foundry practice, and machine shop practice are not so general in their nature and can be well taught in the colleges that are provided with the necessary expensive equipment.

Wood Work.

(a) **Carpentry.** A study of the tools, their care and use, grinding, filing, setting, and repair. Laying out of work from drawings. Planning, gauging, lining, sawing, chiseling, boring and mortising. Talks on carpentry construction. Framing of roofs, trusses and houses and the making of such joints as are found in these structures; half lap, mortise and tenon, dovetail, keyed, wedged and doweled joints. Talks on timber trees and the common kinds of wood; their structure, growth, distribution, adaptability and cost.

It is suggested that as soon as students show sufficient skill in the use of tools they should be given work on the building of a frame house, and that instead of exercise work alone, their efforts be expended on the problems of inside carpentry.

(b) **Cabinet Making.** Prerequisite, course a.

Talks on the cabinet woods; their beauty, usefulness, seasoning, kiln-drying, quarter sawing, storing. Study and use of special tools. Glue, its properties and use. Glue joints, dovetailed, tongued and grooved, clamped, rubbed, and endgrain joints. Sizing. Preparing wood for finishing. Stains and varnishes and their uses. Rubbing down, patching, polishing and waxing. The making of various articles of furniture. Turning and pattern making may be added in schools large enough to pay for the necessary equipment.

References: High School Manual Training Course in Woodwork, by Samuel E. Ritchey. Bench Work in Wood, by W. F. M. Goss.

Metal Work.

Forming. A study of fuels, different kinds of fires and their management. Bending, twisting, drawing, upsetting and welding of iron and mild steel. Calculation of material required for different classes of work. Making of forgings, beginning with simple forms and gradually taking up more complex problems. Metallurgy of iron and steel. Tool steel, its proper heat treatment, forging, hardening and tempering. The making of tools such as a hammer, punch, cold chisel, hardie, swage, fuller, set hammer. Use of drills, taps, dies, reamers and files.

Reference: Forge Practice, by J. L. Bacon.

Metal Work.

Sheet-Metal Work. The course in sheet-metal work should embrace the drafting of patterns, marking out work with the pattern, cutting the material, forming it into shape and joining the parts and the finishing of the seam and joints by the use of solder or spelter. A study of the manufacture of tin, sheet-iron, galvanized iron, sheet brass and sheet copper, and the proper uses of these materials may be made.

Practice should be given in the making of troughing, pipes, elbows, hoppers, and bath tubs. The practice should

be employed on pieces of work used in the construction of the modern home. The proper care and use of tools should be emphasized.

Reference: International Library of Technology.

Art Metal Work. Copper and Brass. A study of the necessary tools. Problems in design. Cutting with shears and chisel. Sawing. Chasing flat work. Drilling, perforating and embossing. Making of escutcheons, name plates, drawer pulls, fobs and hinges. Annealing and pickeling. Brazing and silver soldering. Raising work with hammer and anvils. Use of snarling iron. Finishing, polishing, coloring and enameling.

Reference: Copper Work, by Augustus F. Rose.

Plumbing. Flanging, tapering and bending lead pipe. Soldering plain and wiped joints including butt, T, and Y. Setting of bowls, bath tubs and closet seats with tanks and fittings. Faucets and valves, their construction, operation and disorders. A study of sanitation. Design of complete house system of plumbing and drainage. Placing of iron and tile soil pipe with joints of lead and cement.

Steam and Water Piping. A study of fittings; unions, flanges, nipples, couplings, elbows, tees, bushings, reducers, angle and globe and other valves, right and left hand threads. Measuring and cutting pipe. Threading with tap and die. Capacity of pipes. Use of tables. Calculation of pipes for given flow of water and steam. Designing and placing systems of piping.

References: Modern Plumbing, Steam and Hot Water Heating, by J. J. Lawler. Modern Plumbing, by S. B. Starbuck.

Electric Wiring. Units of measurement and calculation of carrying capacity of conductors. Commercial sizes of copper wire and cables. Insulators, knobs, cleats, bushings, conduits, tape, circular loom, wall sockets, brackets and their uses. Making of joints and splices. Arrangement and placing of wir-

ing systems for electric bells, telephones, electric lighting and power transmission. A study of switch boards with arrangement of bussbars and instruments.

Reference: Wiring Diagrams and Descriptions for Electrical Workers, by Horstmann and Tousley.

The above outlines are suggestive of the various courses that may be given in high school. Individual schools may select from these courses that which best meets their needs, or they may combine some of these courses, thus reducing the total amount of work and the credit. It is suggested that all boys take not less than one-half unit of this work; and that, as a rule, no student should take more than two units.

AGRICULTURE.

Agronomy.

In this course, the most common plants grown upon the farms of the state are studied. A number of practicums and tests with various plants and seeds should be given in connection with the course so that the student becomes familiar with the plants by actual contact.

The following books are suggested: "Cereals in America," by Hunt; "Forage Crops," by Voorhees; "The Potato," by Fraser.

Farm Crops.

A. Cereals.

1. Wheat.

Structure.

Composition.

Physiology.

Botanical relations.

Classification.

Varieties.

Improvement.

Geographical distribution.

Culture.

Irrigating.

Harvesting.

Preservation.

Uses.

Preparation for use.

Obstructions to growth.

Production.

Marketing.

History.

2. Oats.

3. Barley.

4. Rye.

B. Forage Plants.

1. Alfalfa.

Description.

Roots.

Composition.

Improvement.

Soils adapted to.

Climatic conditions favorable to.

Seed bed.

Seeding.

Treatment first year.

Winter killing.

Irrigation.

Varieties.

Rotations.

Planting alfalfa seed.

Cutting.

Curing.

Storing.

Feeding value.

Alfalfa improvement.

Uses.

Enemies.

2. Grasses.

Description.

Structure.

• Composition.

Improvement.

Botany.

Varieties.

Culture.

Irrigation.

Harvesting.

Uses.

Enemies.

C. Tubers and Roots.

1. Potato.

Name.

Structure.

Composition.

Physiology.

Botany.

Varieties.

Improvement.

Culture.

Irrigation.

Harvesting.

Preservation.

Uses.

Preparation for use.

Marketing.

Good quality.

Enemies.

2. Sugar Beets

Description.

Structure.

Composition.

Physiology.

Botany.

Varieties.

Culture.

Irrigation.

Harvesting.

Sugar beet seed.

Improvement.

Beet sugar making.

Horticulture and Forestry.

1. Propagation, seeds, cuttings, budding, grafting and layering. Reference, "The Nursery Book," Bailey. (The MacMillan Co.)

2. History and development of the fruit industry in Colorado and Utah: "Fruit Growing in Arid Regions," Pages 1-12. Paddock and Whipple. (The MacMillan Co.)

3. Location, exposure and soils for orchard, "Fruit Growing in Arid Regions." Chapter II.

4. Preparation of soil, planning and planting the Orchard: Recommendation of varieties. "Fruit Growing in Arid Regions," Chapters III, IV, and XV.

5. Study of fruit buds. "Fruit Growing in Arid Regions," Chapter VI.

6. Pruning apple and peach trees. "Fruit Growing in Arid Regions," Chapters VII and VIII.

7. Orchard tillage and shade crops. "Fruit Growing in Arid Regions," Chapters XI and XII.

8. Irrigation of orchard. "Fruit Growing in Arid Regions," Chapter XIII.

9. Picking and packing apples and peaches. "Fruit Growing in Arid Regions," Chapters XVI and XVII.

10. Marketing fruit. "Fruit Growing in Arid Regions," Chapter XVIII.

11. Follow outline in text with **cultural directions** for the various classes of vegetables.

Reference. "The Principles of Vegetable Gardening," Bailey. (The MacMillan Co.)

12. The forest and forest influences.

Reference. "The Principles of American Forestry." Green. (Wiley & Son.)

13. Forest regeneration. "The Principles of American Forestry," Chapter V.

14. Forest protection, Chapter VIII.

Animal Husbandry.

Domestic animals and their uses by man, as beasts of burden, as food, etc.

The Horse. Origin and development. The horse in America. Origin of our western types—mustang, broncho, etc.

Type of Light Horse. General appearance, conformation, quality and action of best types.

Breeds of Light Horses.

Saddle Horses. Arab, thoroughbred, American saddle horse, Western Pony.

Roadster Horses. American standard bred, Orloff trotter.

Coach Horses. Hackney, French Coach, German Coach.

Ponies. Shetland, Welsh.

Type of Draft Horses. General appearance, conformation, quality and action of best drafters.

Breeds of Draft Horses. Percheron, Clydesdale, Shire, Belgian, Suffolk Punch.

Cattle. Origin and development.

Type of Beef Animal. General appearance, conformation, condition and quality of good beef animal.

Breeds of Beef Cattle. Shorthorn, Hereford, Angus, Galloway, Polled Durham.

Breeds of Dual Purpose Cattle. Red Polled, Brown Swiss, Devon.

Type of Dairy Cattle. General appearance, conformation, quality, etc., of good dairy animal.

Breeds of Dairy Cattle. Jersey, Guernsey, Holstein Friesian, Ayrshire.

Sheep. Origin and development. Use in Western country.

Wool. Classes and uses.

Type of Wool Sheep. General appearance, conformation, quality and fleece of wool sheep.

Breeds of Wool Sheep. Merino, Delain, Rambouillet.

Type of Mutton Sheep. General appearance, conformation, quality and fleece of mutton type.

Breeds. Longwools, Cotswold, Lincoln, Medium wools, Southdown, Shropshire, Hampshire, Oxford, Dorset.

The Pig. Origin and development.

The Lard Type of Pigs. General appearance, conformation, quality and condition of good lard hogs.

Breeds of Lard Pigs. Poland China, Berkshire, Duroc Jersey, Chester White (O. I. C.)

The Bacon Type of Pigs. General appearance, conformation, quality, condition of good bacon pigs.

Breeds of Bacon Pigs. Tamworth, Yorkshire.

Reference books: "Judging Livestock," John A. Craig. "Types and Breeds of Farm Animals," Plumb. "The Horse Book," Johnstone.

The Compounds of Animal Nutrition.

The Digestion and Absorption of Food.

The Use of Digested Food.

Classes of Feeds.

Maintenance Rations.

Milk Production.

Feeding Growing Animals.

Meat Production.

Feeding Working Animals.

Feeding Poultry.

DRAWING.

Art training in the high school should accomplish four things.

1. It should develop a sense of good taste in dress, house building, house furnishing, and general decoration.

2. It should inspire appreciation for natural beauty.

3. It should awaken interest in the master artists and their work.

4. It should train the student in artistic expression.

These ends are readily obtained by a competent teacher with good equipment for art study.

To be competent the teacher must know the fundamental principles of art. Harmony, rythm, space relations, atmos-

phere, perspective, color theory, modes of expression—all these the teacher must know so well that mere differences in teaching and personality of students cannot confuse the teacher and lead him into a narrow, dogmatic method of teaching. There is no short cut to a knowledge of these principles. They are known, or instinctively felt only through long experience, and association with art.

Equipment for art work in the high school is comparatively easy to obtain. During the first year, drawing pads, pencils, charcoal, pen and ink, for sketching indoors and outdoors, serve very well to give the student a foundation in drafting and art appreciation. In the second year colors may be taken up. Still life studies, landscape and life studies form a very good basis for design. It is in design that the student will feel the high utility value of art as well as its aesthetic value.

In the third and fourth years the work should be somewhat more special and technical. Work in antique models, historic costume, color theory, and general art history may be adapted to the needs of schools of any size.

To supplement this work the student should be surrounded with as many art examples and art books from master hands as the school is able to supply.

MUSIC.

The basis of all musical education consists of the knowledge and ability to read and write music. To comprehend the meaning in musical speech a thorough course in the study of tone characteristics, both in relation to scales, intervals and harmonic combinations, is as essential as is the study of words to the enjoyment and understanding of a language. Rote singing is beneficial to the cultivation of a love for music, but stops far short of real development or advancement. The best music can not easily be retained by the memory and a great deal of it can not be learned in any degree except by those who have trained their minds in the art of reading (without the aid of an instrument) the printed page of music. The name of this subject is "solfeggio."

Where the high school students have not had a systematic course in "solfege" in the grades, the third and fourth year students should have at least two recitations weekly, strictly on this subject. If their educational course points to normal work and the acquirement of a teacher's certificate, this amount of this kind of work is indispensable.

A chorus class, meeting once a week, and an orchestral club, meeting twice a week throughout the four years, is desirable for the social welfare of the school and also profitable to the students. An instructor with special qualifications for this work should be engaged—one who can raise the musical department to a position of dignity.

Where a high school has received its pupils from grade schools which have not neglected systematic instruction in "solfege," at least one year of "advanced review solfege" should be given, together with the singing and instrumental societies above mentioned. Where the school is provided with a professional musical instructor of high standing a course in musical history with lecture recitals would form a splendid addition to the above.

COMMERCIAL GEOGRAPHY.

Commercial Geography has to do with the earth as an agent in the production of commodities upon which human life depends. The aim should be to give an account of the physical features, the products and the trade of the world. Particular emphasis should be laid upon the United States of America. In dealing with foreign countries the best plan is to treat them and their products in relation to our own country.

The plan followed here is to treat the commerce of each country under the following heads: First, physical basis; second, the people; third, the products; and fourth, the trade.

I. Climate and Commerce.

- a. Temperature.
- b. Isotherms.
- c. Trade winds.

- d. Rainfall.
- e. Irrigation.
- f. Climatic features of the United States.
- II. Forestry.
 - a. Forest and rainfall.
 - b. Forest and irrigation.
 - c. Forest products.
 - d. Forestry as a science.
- III. Regional Geography of the United States.
 - a. Atlantic.
 - b. Appalachian region.
 - c. Mississippi valley.
 - d. Great Plains.
 - e. Rocky Mountain and Great Basin.
 - f. Pacific Slope.
- IV. Man and Commerce.
 - a. Primitive man.
 - b. Civilized man.
- V. Mineral Products.
 - a. Iron.
 - b. Copper.
 - c. Lead and zinc.
 - d. Tin.
 - e. Gold.
 - f. Silver.
 - g. Platinum.
 - h. Mercury.
 - i. Coal.

Vegetable Products.

Corn.	Rice.
Wheat.	Sugar.
Barley.	Fruit.
Oats.	Tobacco.
Buckwheat.	Hops.
Potatoes.	

Animal Products

Cattle.	Hogs.
Horses and Mules.	Sheep and Wool.
Poultry.	Fish.

- VI. International Commerce of the United States.
Railroad transportation.
Motor transportation.
Wagon transportation.
Movement of live stock.
Grain and farm products.
Trade of the United States with the Philippine Islands, Hawaii and Porto Rico.
- VII. Resources and products of Mexico, Central and South America should be treated in comparison with the products of the United States as far as possible.
- VIII. A similar study should be made of the products of Europe, Asia and Africa, paying especial attention to those which are imported into the United States and used here in primary or secondary consumption.

BOOKKEEPING.

a. Bookkeeping and Accounting. (Elementary.)

The aim of this and the following courses should be to train the student in the art of bookkeeping along the basic lines of accountancy. The completion of these courses should not only qualify for a high degree of efficiency in the art of bookkeeping, but it should also lead up to a very thorough understanding of the general principles and practices of accountancy.

The student should be required to work out a number of sets along various lines illustrative of the principles studied. It should be a course in theory primarily, and it should be strictly modern in that the student classifies and enters the transactions in the books in which they belong, from the start. Purchases, sales, notes and acceptances, cash receipts and payments, etc., are entered directly in their respective books from which their proper accounts in the ledger are debited or credited. The trading, and profit and loss statements, statements of resources and liabilities, and the other statements, analysis

sheets, etc., are required in connection with each set and conform strictly to established professional forms employed by accountants. Special attention is also paid to ledger closings, the grouping of accounts, the use of controlling accounts, the analysis of accounts, and the preparation of statements.

b. Bookkeeping and Business Office Practice. (Advanced.)

This course follows logically Course a. It should consist of the working out of a number of prepared budgets, such as wholesale, manufacturing, cost accounting, voucher accounting, banking, and branch stores.

STENOGRAPHY AND TYPEWRITING.

In a four year course in stenography and typewriting no stenography need be given the first year, as it is far preferable to have the student take a good course in Business Correspondence and also a course in Penmanship about the same amount of time. Typewriting may be given at the same time.

During the second year of a business course a five-hour course in Stenography should be given together with a second five-hour course in Typewriting. This should complete his course in typewriting in so far as actual instruction is necessary and will leave the student, during his second year in Stenography, qualified to transcribe the work given the following year in Stenography II, on the typewriter, as it should be done.

In the third year Stenography II should be given. This should also be a five-hour course. No regular typewriting course is needed this year as the student will get plenty of practice on the machine in connection with his second year in Stenography.

During the fourth year an advanced course in Stenography may be given. This should receive three two-hour periods per week and should consist largely of actual business practice, reporting work, etc., placing the student in practically the same positions as would probably be met with in

the business world. This course, like stenography II, would require considerable work in typewriting so that no regular course need be given in this subject.

In Stenography, one of the standard shaded line systems, such as Graham or one of the Pitmanic systems, should be taught. Good text books are always obtainable for either of these standard systems. The touch system of typewriting should be taught, as this has proved to be of far greater worth than any other. Text-books for typewriting are also easily obtained.

Every student in Stenography and Typewriting should take at least one course in English each year, completing the requirements up to and including higher rhetoric and composition, and where possible, should also be given an additional course in business English.

Penmanship.

This course should aim to develop a practical handwriting. Much stress should be laid on movement of the hand and position of the hand and body. Beginning with easy movement drills, the student is led into more difficult exercises, completing with words and short sentences. Designed for first year students.

Business Correspondence and Spelling.

This course aims to instruct the student in the methods of the business men and in the management of business affairs. The student is called upon to meet actual business problems in the way in which they must be met in actual business. It gives practical exercises in correct commercial correspondence and develops a technical business vocabulary for the student. The course is designed for the first year students.

Stenography.

This is a thorough, practical course, designed for the purpose of preparing the student for actual work. After the principles of the text are mastered, the dictation of commer-

cial correspondence is taken up. Graham's Phonography, one of the most successful of the many excellent Pitmanic systems, is taught. Prerequisites, Penmanship and Commercial Correspondence.

2. After a thorough review of the text books, advanced correspondence work, legal documents, speeches, court testimony, etc., are taken up. The course is especially designed to fit the student for high grade office work and to fill the demand for efficient secretaries. Much transcribing on the typewriter is required.

3. This is an advanced course for those who wish to qualify for positions as reporters, etc. The course will consist largely in a study of public meetings, court proceedings, and the reporting of speeches, trials, etc. A study of technical phraseology and reporting methods will also receive attention. Practically all work will be transcribed on the typewriter. Prerequisite, stenography 2.

Typewriting.

1. Beginning with the simple exercises, the student learns correct fingering and the proper manipulation of the typewriter. Special attention is given to the care and the mechanism of the machine.

2. A special course for those taking Stenography and those who wish advanced work along this line. In addition to the elementary principles in Typewriting 1, students make copies of correctly written correspondence, legal forms, etc.; also personal composition and dictation. As soon as moderate speed is attained, the work includes transcription of shorthand notes.

PHYSICAL EDUCATION.

Systematic instruction in this subject is strongly urged for the whole high school period for the sake of its own value.

The play instinct should be fostered, developed, and guided. The games chiefly to be encouraged are those that

are suited for the many—games of comparatively low organization with large and indefinite number of participants. From these a gradual transition may be made towards the highly specialized national games: baseball, basketball, football, although it is doubtful whether the two latter, as usually played, are of real value in the high school.

Competition in track and field events should be arranged between groups, not between individuals, in order that those least strong, least speedy, least developed shall be induced to improve their condition and thus raise the general average of their respective groups. In accord with this prizes should have little or no intrinsic value, and be awarded to the group, class, school, rather than to the individual.

For the girls the competitive element should be minimized. Inter-scholastic basketball or competitions before large audiences are detrimental to the moral as well as the physical well-being of the girl. The track events usual for boys should at least not be encouraged. In their place and instead of the more complicated games of the boys we recommend various forms of the dances now in common use as a part of physical training.

Formal gymnastic should supplement the freer activities to secure voluntary control, erect carriage, and all-sided activity. Better results are gained by frequent short periods than by few ones of longer duration. For practical reasons we suggest a minimum of three weekly periods of 45 minutes. These periods should not encroach on the time for free or supervised play.

APPENDIX A.

Apparatus and Materials for the Equipment of Science Laboratories.

The following lists of apparatus and materials represent the minimum requirement in equipment for the courses here represented. The state high school authorities are invited to confer with the University of Utah and the Agricultural College of Utah in regard to the selection of additional apparatus and the purchase of apparatus and supplies.

Where no quantities are given, one is to be understood.

CHEMISTRY.

(For General Use.)

Apparatus.

Balance (\$15.00).

Thermometer, centigrade, 360 degrees.

Hoffman's Electrolysis Apparatus (requires direct current).

Burette, 50 cc. (glass stoppered).

Pipettes, 3 (10, 25, 50 cc.).

Hard glass tubing (one-half inch) 10 feet.

Magnet.

Chemicals.

Acid, sulphuric, 27 pounds (3 bottles).

Acid, hydrochloric, 30 pounds (5 bottles).

Acid, nitric, 21 pounds (3 bottles).

Acid, acetic, 1 pound.

Acid, phosphoric, one-half pound.

Acid, tartaric, 1 pound.

Acid, oxalic, 1 pound.

Metallic aluminum, 1 pound.

Metallic zinc, 10 pounds.

Iron (filings), 1 pound.

Copper, 5 pounds.

Lead (foil), 2 pounds.

Sodium, $\frac{1}{4}$ pound.

Tin, 1 pound.
Silver, 1 ounce.
Arsenic, $\frac{1}{2}$ pound.
Antimony, $\frac{1}{2}$ pound.
Mercury, 2 pounds.
Sulphur, 5 pounds.
Ammonium chloride, 5 pounds.
Ammonium nitrate, 2 pounds.
Ammonium hydroxide, $22\frac{1}{2}$ pounds (5 bottles).
Ammonium sulphate, 2 pounds.
Alum, potash, 2 pounds.
Alum, chrome, 1 pound.
Alcohol, ethyl, $\frac{1}{2}$ gallon.
Arsenic trioxide, 2 pounds.
Antimony, trioxide, 1 pound.
Barium, chloride, 5 pounds.
Barium, nitrate, 1 pound.
Barium peroxide, 2 pounds.
Bismuth nitrate, 1 pound.
Manganese dioxide (lump), 5 pounds.
Manganese dioxide, powdered, 1 pound.
Manganese sulphate, $\frac{1}{2}$ pound.
Mercuric chloride, $\frac{1}{2}$ pound.
Mercuric oxide, 1 pound.
Borax, powdered, 2 pounds.
Bromine, $\frac{1}{4}$ pound.
Iodine, $\frac{1}{4}$ pound.
Phosphorus, yellow, $\frac{1}{4}$ pound.
Phosphorus, red, $\frac{1}{2}$ pound.
Ferrous sulphide, 5 pounds.
Potassium bromide, 1 pound.
 " chloride, 1 pound.
 " iodide, $\frac{1}{2}$ pound.
 " hydroxide, 2 pounds.
 " cyanide, $\frac{1}{2}$ pound.
 " chromate, $\frac{1}{2}$ pound.
 " thiocyanate, $\frac{1}{4}$ pound.
Marble, 10 pounds.

Calcium chloride, 2 pounds.
Calcium sulphate (gypsum), 2 pounds.
Carbon disulphide, 2 pounds.
Cobalt nitrate, $\frac{1}{2}$ pound.
Copper sulphate, 2 pounds.
Copper nitrate, 1 pound.
Ferric chloride, $\frac{1}{2}$ pound.
Ferrous sulphate, 2 pounds.
Litharge, 1 pound.
Lead peroxide, 1 pound.
Lead nitrate, 2 pounds.
Litmus paper (red and blue) 1 quire each.
Indigo, 1 ounce.
Magnesium ribbon, 10 feet.
Magnesium sulphate, $\frac{1}{2}$ pound.
Magnesium carbonate (magnesite), 2 pounds.
Potassium dichromate, 2 pounds.
Potassium permanganate, 1 pound.
Potassium nitrate, 5 pounds.
Potassium sulphate, $\frac{1}{2}$ pound.
Potassium chlorate, 5 pounds.
Potassium ferrocyanide, $\frac{1}{4}$ pound.
Potassium bitartrate, $\frac{1}{4}$ pound.
Silver nitrate, $\frac{1}{4}$ pound.
Cadmium sulphate, $\frac{1}{4}$ pound.
Sodium chloride (common salt), 10 pounds.
 " hydroxide, 5 pounds.
 " carbonate, crystals, 5 pounds.
 " bicarbonate, 2 pounds.
 " sulphate, 1 pound.
 " thiosulphate, 1 pound.
 " acetate, crystals, 1 pound.
 " hydrogen phosphate, 1 pound.
Sodium nitrate, 1 pound.
Nickel nitrate, $\frac{1}{4}$ pound.
Stannous chloride, $\frac{1}{4}$ pound.
Zinc sulphate, 1 pound.
Strontium nitrate, $\frac{1}{4}$ pound.

Order technical, or commercial, grade of chemicals where possible.

Above material ample for class of 10 students.

(For individual use of each student.)

Articles Returnable.

Two 50 cc. beaker.
Two 125 cc. beaker.
Two 300 cc. beaker.
One blowpipe.
Four bottles 8 oz. saltmoths.
One Bunsen burner.
One clamp, small, with holder.
One clamp test tube.
One cobalt glass.
One cork-borer.
One crucible porcelain 15 cc.
One cylinder, graduated 100 cc.
One deflagrating spoon.
Two dishes, porcelain, 50 cc.
One dish, porcelain, 200 cc.
One flask, 100 cc.
One flask, 250 cc.
One flask, 500 cc.
One flask, 1000 cc.
One forceps, iron.
Two funnels, 8 cm.
One funnel Thistle tube.
One mortar and pestle, 4 inch.
One sand bath.
One spatula horn.
One support retort, 3 ring.
One support funnel.
One support test tube.
Twelve test tubes, 6 inch.
One tongs, crucible iron.
One tripod.

One trough, pneumatic.
Two watch glass 7.5 cm.
One watch glass 10 cm.
One wing top.
Keys to desk.

Articles Not Returnable.

One box of matches.
One file, triangular.
One file, round.
One filter paper, qualitative 11 cm.
Two-foot glass rod.
One gas tubing for Bunsen burner.
Five-foot glass tubing.
One No. 6 rubber stopper.
Six-inch rubber tubing.
One stick charcoal.
One test tube brush.
One towel.
One wire gauze.
One platinum wire.

The above equipment for Chemistry should be obtainable for about \$350 to \$400.

PHYSICS.

One mirror, convex and concave.
One flint glass prism, 4 inch.
One set lenses.
One double convex lens, 3 in. diameter, 7 in. focus.
One double concave lens, 2 in. diameter, 8 in. focus.
One double convex lens, 1½ inch diam., 8-inch focus.
One double convex lens 1½ inch diam., 4-inch focus.
One optical disk, improved model.
One Geryk pump No. 1.

One pump plate of glass, 10 in. diameter on tripod, with stopcock, with opening in cock form of T, so as to admit from outside into receiver.

One bell glass.

One bell in Vacuum.

One Bacchus illustration.

One rotator.

One centrifugal hoop.

One center of gravity apparatus.

One siren disk.

One Newton's disk.

One manometric flame apparatus.

Eight ounces copper magnet wire No. 24 D. C. C.

Eight ounces copper magnet wire No. 20 D. C. C.

One set of equilibrium tubes.

One Tantalus cup.

One convection apparatus.

One pair bar magnets.

One electro-magnet.

Two horse shoe magnets.

One magnetic needle mounted on stand.

One hollow brass cylinder 1 in. long by $\frac{3}{4}$ in. outside diam. to be made from piece brass tubing with 1-16 in. wall (for Exp. 4 of Lab. Manual.)

Three glass U tubes $\frac{5}{8}$ in. diam., 6 in. long.

One piece glass mirror 3x4 in.

Two triangular files.

Three brass discs turned true from 1-16 in. plate, 1 each about $2\frac{1}{2}$ in. x $4\frac{1}{2}$ in. and $6\frac{1}{2}$ in. (for Exp. 2b).

One steel plate about 1x6x $\frac{1}{8}$ in. smooth on one side with fine lines drawn lengthwise along the middle (Exp. 1).

One Weston voltmeter, round type, 3-volt scale.

One pulley of hardwood.

Two barometer tubes.

One barometer.

Ten pounds mercury and container.

Two demonstration hydrometers, wood.

One hydrometer for heavy liquids.

One hydrometer for light liquids.

Four five-foot lengths soft glass tubing $1\frac{3}{8}$ in. for Resonance and Kundt's tubes.

Two pieces glass tubing, each 2x20 cm.

Four lengths soft glass tubing $\frac{1}{4}$ in. diameter 5-16 in. diameter, $\frac{3}{8}$ in. diameter, and $\frac{1}{2}$ in. diameter.

Two 12-foot lengths antimony rubber tube, $\frac{1}{4}$ in.

Twelve feet white rubber tubing, 5-16 in. diameter.

Twelve feet white rubber tubing, $\frac{3}{8}$ in. diameter.

Twelve feet white rubber tubing, $\frac{1}{2}$ in. diameter.

One hardwood support, Schellback's universal movement.

Two Burette supports.

One funnel holder.

Two iron supports, medium.

One iron support, large.

One Burette clamp.

One Universal condenser clamp.

Two condenser clamps.

Three clamp holders.

One glass funnel, 3 in.

One glass funnel, 4 in.

One steel forcep.

One brass crucible tongs.

Two iron tripods.

One mercury trough.

Two alcohol lamps 4 ounces.

Two alcohol lamps 8 ounces.

Three pieces wire gauze brass 5x5 in.

One percolator funnel 1 qt. capacity.

(For sound resonator tube apparatus.)

One tuning fork C128.

Two tuning forks C 256.

One tuning fork C 512.

Four tuning forks giving major chord.

One tuning fork D 288.

Three rubber hammers for striking tuning forks.

One sonometer, with four wires, two of the size of 1 and 2 of another size, all suitable for this instrument.

One brass rod 1 meter long and about $\frac{3}{8}$ in. diameter, for Kundt's apparatus.

One ditto, aluminum.

Two apparatus "A" (hypsoneter).

Three water traps.

Two air thermometers, Galelio pattern.

Six chemical thermometers, scale on stem, 10 degrees to 110 degrees C, graduated in degrees.

Three meter sticks.

One Vernier caliper.

One micrometer caliper.

Two cylindrical glass graduates 100 cc.

Two ditto, 200 cc.

One inside caliper, 6 in.

One nickel-plated brass cylinder on foot about 3.5 cm. diam. x 16 cm. high, made by soldering a brass plate on one of the tubes. Must be of uniform diameter and plane bottom.

Two Harvard trip balance.

One set brass weights 1 to 500 g.

One set brass weights 1 to 1000 g.

Two sets brass weights 1 to 50 ctgm.

One balance, sensitive to 1 mg.

One hydrostatic balance.

One set weights 1 mg. to 50 gr.

Three spring balance 250 gr. capacity.

One spring balance English and metric scales, 30 lbs. capacity.

One spring balance 2000 gr. capacity.

One brass protractor.

Three pair Eagle pencil compasses.

Three diagonal metric scales, boxwood.

Six metric rulers, 30 cm.

Two Erdmann's Burette floats W-glass points.

Five pounds lead shot about No. 4.

One cast iron ball 3 in. diam. drilled (for centrifugal experiment).

One steel ball for acceleration $1\frac{1}{2}$ in.

One brass ball $1\frac{1}{2}$ in. for pendulum.

Three cast iron balls, drilled, 1 in.

Two hardwood balls, drilled 1 in.

One pendulum clamp.

Three levers.

Three wood prisms.

One Hall's carriage for inclined plane.

One wheel and axle, 3 diameters to screw to table or bench 9 in.

Three pulleys, single, with hook.

One second's pendulum.

One testing machine for tensile strength of wire, complete.

Three spools iron wire, 1 each No. 24, 26 and 28.

One spool brass wire, No. 24.

One ditto, No. 26.

One ditto, No. 28.

Two hydrometer jars with lip 10x2 in.

One ditto 15x3 in.

One ditto 3x18 in.

One hollow brass tube about $\frac{3}{4}$ in. diam. and 2 in. long closed squarely at each end.

Three sp. gr. bottles 25 cc, ungraduated.

One Boyles Law apparatus.

One three-scale thermometer.

One linear expansion apparatus.

One brass rod for expansion apparatus.

One aluminum rod for expansion apparatus.

One calorimeter (for sp. heat).

Two calorimeters (to be enclosed in larger cup with covers for latent heat determinations.)

One lb. copper shot for specific heat.

One electric machine.

One electroscope.

One glass friction rod.

One vulcanite friction rod.

Six pith balls.

One pith ball electroscope on stand.

One discharger.
One brass chain.
One Leyden jar with moveable coatings.
One hollow globe.
One induction cylinder.
One proof plane.
One electric whirl.
One Universal support.
One electric chime.
One holder for Geissler tubes.
One Geissler tube 8 in.
One electric plume.
Six dry cells.
One Samson battery.
One Daniell battery.
One pound bottle concentrated sulphuric acid.
One zinc rod.
One carbon rod.
One copper rod.
One tin rod.
One iron rod.
One lead rod.

(Above rods are all of same diameter approximately for E. M. F. Series.)

Two thick-walled glass tumblers with straight sides to be used in making cells for the above material.

Two feet ea. of Nos. 3, 6, 10 and 14 bare copper wire.

One square foot sheet zinc about 1-16 in.

One sheet copper 4x6 in. about 1-24 in.

One primary and secondary coil.

One electrolysis of water apparatus.

One stand for above.

Three Mohrs clamps.

One telegraph instrument.

Two galvanoscopes.

One student's D'Arsonval galvanometer.

One resistance box and bridge combined.

One contact key.

One electric bell.

Ten binding posts, wood screw.

One hundred feet bare German silver wire No. 22.

Fifty feet ditto No. 20.

(The last three items are to be used in making a resistance board, as per Lab. Manual, Experiment XXX.)

PHYSIOLOGY.

Individual.

Bunsen burner.

Test-tube stand.

Ten test tubes.

Funnel stand.

Funnel 3 inch.

Tripod.

Mortar and pestle.

Erlenmeyer flask 100 cc.

Porcelain dish 4½ inch.

Two beakers 4-oz. and 8-oz.

Stirring rod.

Graduate 100 cc.

Pipette 5 cc.

Wire gauze 5x5 in.

Twenty-five filter papers 5 in.

Matches, one box.

Group of Four.

Iron stand.

Double clamp.

Burette.

Glass plate 5x5 in.

Frog board with spring clips.

Granite pan, shallow.

Thermometer, 0-100 Cent.

Small dissecting set.

Class (for Demonstration Purposes.)

Induction coil.

Platinum electrodes.

One pair brass electrodes.

Simple key.

Short-circuiting key.

Signal magnet.

Muscle lever, light.

Three writing levers.

Kymograph.

Kymograph paper, 50 sheets.

Two heart levers.

Model respiration scheme (Porter) \$2.00.

Model circulation scheme (Porter) \$5.00.

Ergograph (Porter) \$1.50.

Tuning fork.

Balance 5-1000 grams.

Compound microscope.

Charts.

Chemicals and biological materials sufficient for the use of the above apparatus are to be included.

ZOOLOGY.

(Minimum for class of Twelve.)

One compound microscope.

Twelve dissecting microscopes.

Twelve dissecting pans, wax bottoms.

Twelve dissecting sets.

Six alcohol lamps.

Twenty-four tumblers.

Twelve pint jars.

Twenty-four dropping bottles.

Twelve collecting bottles.

Twelve Syracuse watch glasses.

Six beakers 1½ ounces.

Twenty-four test tubes, 4x½.

Three test tube brushes.

One graduated cylinder, 100 cc.

One gross assorted corks.

One chemical thermometer.

One box glass slides.
One ounce cover glasses, No. 2, $\frac{3}{4}$ in.
One section razor.
250 grams ether or chloroform.
125 cc. nitric acid.
125 cc. sulphuric acid.
125 cc. hydrochloric acid.
Ten grams eosin, dry.
One gallon ethyl alcohol.
One gallon methyl alcohol (wood).
100 grams absolute alcohol.
250 grams sodium or potassium hydrate.
One half gallon formaline.
Fifty grams glycerine.
Twenty-five grams chromic acid crystals.
Twenty-five grams corrosive sublimate.
Two ounces Canada Balsam.
Twenty-five cc. haematoxylin (Delafield's).
Twenty-five cc. borax carmine (Grenacher's).
Ten grams methyl green, dry.
250 grams xylol C. P.

A hand microtome, a 5-gal. aquarium jar, and a few battery jars or smaller aquaria are very desirable additions to the above list. A compound microscope for each two students should be provided, if possible.

BOTANY.

For a class of twelve in Botany, add:

Five compound microscopes (making one for each two students).

Ten grams iodine (crystals).
Twenty-five grams potassium iodide.
And omit:—
Dissecting pans.
Ether or chloroform.
Chromic acid.
Corrosive sublimate.

For either class the following are desirable additions:

Twelve assorted, 1 and 2 hole rubber stoppers.

One pound glass tubing, $\frac{1}{4}$ in.

Ten feet rubber tubing, $\frac{1}{4}$ in.

One porcelain mortar.

One funnel, 4 in.

Two packages filter paper, 4 in.

One small balance, with weights.

Two ring stands, 3 ring.

Three culture slides.

APPENDIX B.

LIST OF TEXT BOOKS ADOPTED OR RECOMMENDED.

Agriculture — Elementary. Hilgard and Osterhout, "Agriculture for Schools of the Pacific Slope," Macmillan & Co.

Agronomy. Hunt, "Cereals in America," Judd. Voorhees, "Forage Crops," Macmillan & Co. Frazer, "The Potato," Judd.

Animal Husbandry. John A. Craig, "Judging Live-stock," John A. Craig. Plumb, "Types and Breeds of Farm Animals," Ginn & Co. Johnstone, "The Horse Book," Sanders.

Algebra. Wells' "First Course in Algebra," Wells' "Secondary School Algebra," both by D. C. Heath & Co.

Bookkeeping. Powers & Lyon, "Bookkeeping;" Powers & Lyon, "Commercial Arithmetic;" Powers & Lyon, "Rapid Calculation," Powers & Lyon Co. "A First Book in Business Methods," Rand-McNally Co.

Botany. Berger & Davis, "Principles of Botany;" Berger & Davis, "Guide for Laboratory and Field Work," both by Ginn & Co.

Chemistry. Hessler & Smith, "Chemistry," Ginn & Co.

Civics. James & Sanford, "Civics," Chas. Scribner's Sons. Fiske, "Civil Government," Houghton, Mifflin & Co.

Economics. Bullock, "Elements of Economics," Silver, Burdett & Co.

English. (Grammar and Composition.) Kimball, "English Sentence," American Book Co. Buehler, "Exercises in English," American Book Co. Syke, "Composition and Rhetoric," Chas. Scribner's Sons. Gardiner, Kitteredge & Arnold, "Composition and Rhetoric," Ginn & Co. Hill, "Beginnings of Rhetoric," American Book Co. (Oral Expression.) Hyde, "New Speaker and Reader," Ginn & Co.

French. Fraser & Squair, "French Grammar," D. C. Heath & Co. Francois, "Elementary French Prose Composition," American Book Co. Aldrich & Foster, "French Reader," Ginn & Co. Kuhn, "French Reader," Henry Holt & Co. Koren, "French Prose Composition," Henry Holt & Co. "French Daily Life," Newson Co.

Geometry. Wentworth, "Plane Geometry," Wentworth. "Solid Geometry," both by Ginn & Co. Wells, "New Plane Geometry," D. C. Heath & Co.

German. Spanhoofd, "Lehrbuch der Deutschen Sprache," D. C. Heath & Co. Joynes-Wesselhoeft, "German Lesson Grammar," D. C. Heath & Co. Fraser & Van der Smitten, "German Grammar," D. C. Heath & Co. Becker & Rhodes, "Elements of German," Scott, Foresman & Co. Bernhardt, "German Composition," Ginn & Co. Fossler, "Practical German Conversation," Ginn & Co. "German Daily Life," Newson Co.

Greek. Gleason, "Greek Primer," American Book Co. Pearson, "Greek Prose Composition," American Book Co.

Geography. Gilbert & Brigham, D. Appleton & Co. Davis, "Elementary Physical Geography," Ginn & Co. Salisbury, "Briefer Course in Physiography," H. Holt & Co. Tarr, "New Physical Geography," Macmillan & Co.

History and Civics. Hart, "Essentials of American History," The Macmillan Co. James & Sanford, "Civics," Chas. Scribner's Sons. Fiske, "Civil Government," Houghton, Mifflin Co.

Horticulture and Forestry. Bailey, "The Nursery Book," The Macmillan Co. Paddock & Whipple, "Fruit Growing in Arid Regions," The Macmillan Co. Bailey, "The Principles of Vegetable Gardening," The Macmillan Co. Green, "The Principles of American Forestry," Wiley & Son.

Latin. Bennett, "First Year Latin," Allyn & Bacon. Hale, "First Latin Book," Atkinson, Mentzer & Grover. D'Ooge, "Latin for Beginners," Ginn & Co. Potter, "An Elementary Latin Course," Sanborn & Co. Collar & Daniell,

"First Year Latin," Ginn & Co. Greenough, D'Ooge & Daniell, "Second Year Latin," Ginn & Co. D'Ooge, "Latin Composition," Ginn & Co. Bennett, "Latin Prose Composition," Allyn & Bacon. D'Ooge, "Select Orations of Cicero," Sanborn & Co. Knapp, "Virgil," Scott, Foresman & Co.

Mechanical Drawing. Reinhardt, "Freehand Lettering," Reinhardt, "Technic of Mechanical Drawing," both by The Engineering News.

Mechanic Arts. (References for Teachers.) (Carpentry.) Samuel E. Ritchey, "High School Manual Training Course in Woodwork," American Book Co. W. F. M. Goss, "Bench Work in Wood," Ginn & Co. (Metal Work—Forging.) J. L. Bacon, "Forge Practice," John Wiley & Sons. (Sheet Metal Work.) "International Library of Technology," International Text Book Co. (Art Metal Work.) Augustus F. Rose, "Copper Work," Davis Press. (Plumbing.) J. J. Lawler, "Modern Plumbing, Steam and Hot Water Heating," E. N. Miner. Starbuck, "Modern Plumbing," Starbuck. (Electric Wiring.) Hortsman & Tousley, "Wiring Diagrams and Description for Electrical Workers," F. J. Drake & Co.

Physics. Millilsin & Gale, "Physics," Ginn & Co. Carhart & Chute, "Physics," Allyn & Bacon.

Physiology. Hough & Sedwick, "Human Mechanism," Brown, "Practice for Laboratory," both by Ginn & Co.

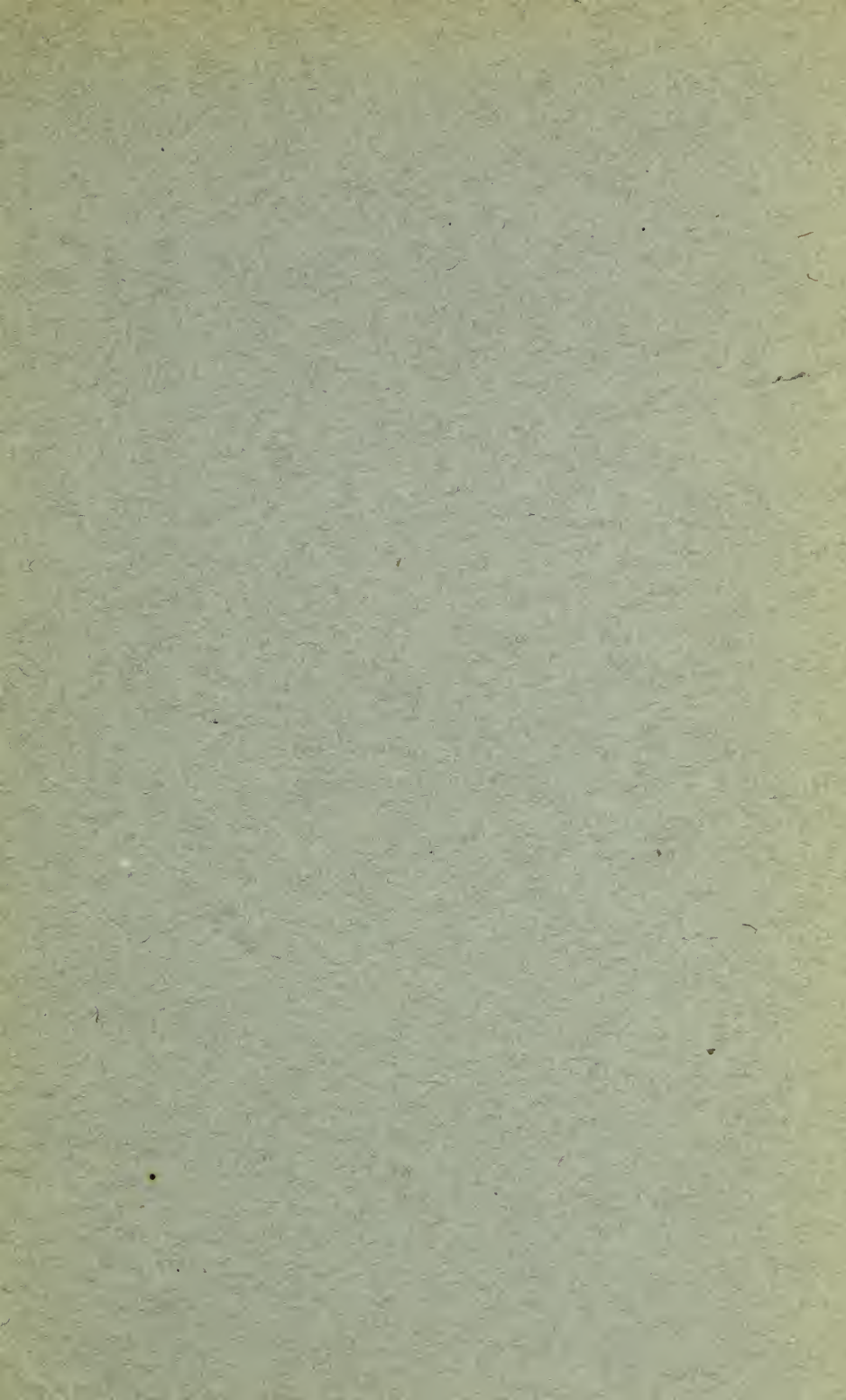
Spanish. Giese, "First Spanish Book," Appleton & Co. Hills & Ford, "Spanish Grammar," D. C. Heath & Co. Umphrey, "Spanish Prose Composition," American Book Co.

Zoology. Linnville & Kelley, "Text-book in Zoology," Ginn & Co.

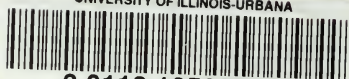
Zoology-Physiology. Hunter, "Essentials of Biology," American Book Co. Kellogg, "The Animals and Man," H. Holt & Co.

PUBLISHERS' DIRECTORY.

Allyn & Bacon, Chicago.
American Book Co., Chicago.
Atkinson, Mentzer & Grover, Chicago.
Charles Scribner's Sons, New York.
D. Appleton & Co., Chicago.
Davis Press, Worcester, Mass.
D. C. Heath & Co., Chicago.
E. N. Miner, New York.
Ginn & Co., Chicago.
Henry Holt & Co., New York.
Houghton, Mifflin & Co., Boston.
International Text Book Co., Scranton, Pa.
Judd, New York.
John A. Craig, Ames, Iowa.
Macmillan Co., New York.
Newson Co., New York.
Powers & Lyon, Chicago.
Rand-McNally Co., Chicago.
Sanborn & Co., Chicago.
Sanders, Chicago.
Scott, Foresman & Co., Chicago.
Silver, Burdett & Co., New York.
Starbuck, Hartford, Conn.
The Engineering News, New York.
T. J. Drake & Co., Chicago.
Wiley & Son, New York.



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